# EPA KEY CONTACTS FORM

OMB Number: 2030-0020
Expiration Date: 06/30/2024

**Authorized Representative:** *Original awards and amendments will be sent to this individual for review and acceptance, unless otherwise indicated.*

**Name:** Prefix: Mr. First Name: Jerome Middle Name:
Last Name: Shabazz Suffix:
**Title:** Executive Director

**Complete Address:**

Street1: 6134 Lancaster Avenue
Street2:
City: Philadelphia State: PA: Pennsylvania
Zip / Postal Code: 19151-3226 Country: USA: UNITED STATES
**Phone Number:** 215.879-7770 **Fax Number:**
**E-mail Address:** jshabazz@overbrookcenter.org

**Payee:** *Individual authorized to accept payments.*

**Name:** Prefix: Mrs. First Name: Gloria Middle Name:
Last Name: Shabazz Suffix:
**Title:** Board Treasurer

**Complete Address:**

Street1: 6134 Lancaster Avenue
Street2:
City: philadelphia State: PA: Pennsylvania
Zip / Postal Code: 19151-3226 Country: USA: UNITED STATES
**Phone Number:** 215.327-7056 **Fax Number:**
**E-mail Address:** gshabazz@overbrookcenter.org

**Administrative Contact:** *Individual from Sponsored Programs Office to contact concerning administrative matters (i.e., indirect cost rate computation, rebudgeting requests etc).*

**Name:** Prefix: Mr. First Name: Jerome Middle Name:
Last Name: Shabazz Suffix:
**Title:** Exec. Director

**Complete Address:**

Street1: 6134 Lancaster Avenue
Street2:
City: Philadelphia State: PA: Pennsylvania
Zip / Postal Code: 19151-3226 Country: USA: UNITED STATES
**Phone Number:** 215.879-7770 **Fax Number:**
**E-mail Address:** jshabazz@ovrerbookcenter.org

EPA Form 5700-54 (Rev 4-02)

# EPA KEY CONTACTS FORM

**Project Manager:** *Individual responsible for the technical completion of the proposed work.*

**Name:** Prefix: Mr. First Name: Jerome Middle Name:

Last Name: Shabazz Suffix:

**Title:** Exec Director

**Complete Address:**

Street1: 6134 Lancaster Avenue

Street2:

City: Philadelphia State: PA: Pennsylvania

Zip / Postal Code: 19151-3226 Country: USA: UNITED STATES

**Phone Number:** 215.879-7770 **Fax Number:**

**E-mail Address:** jshabazz@overbrookcenter.org

OMB Number: 2030-0020
Expiration Date: 06/30/2024

# Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance

Note: Read Instructions before completing form.

**I. A. Applicant/Recipient (Name, Address, City, State, Zip Code)**

Name: JASTECH Development Services, Inc

Address: 6134 Lancaster Avenue

City: Philadelphia

State: PA: Pennsylvania Zip Code: 19151-3226

**B. DUNS No.** 1507143630000

**II. Is the applicant currently receiving EPA Assistance?** ☒ Yes ☐ No

**III. List all civil rights lawsuits and administrative complaints pending against the applicant/recipient that allege discrimination based on race, color, national origin, sex, age, or disability. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)**

None

**IV. List all civil rights lawsuits and administrative complaints decided against the applicant/recipient within the last year that allege discrimination based on race, color, national origin, sex, age, or disability and enclose a copy of all decisions. Please describe all corrective actions taken. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)**

None

**V. List all civil rights compliance reviews of the applicant/recipient conducted by any agency within the last two years and enclose a copy of the review and any decisions, orders, or agreements based on the review. Please describe any corrective action taken. (40 C.F.R. § 7.80(c)(3))**

None

**VI. Is the applicant requesting EPA assistance for new construction? If no, proceed to VII; if yes, answer (a) and/or (b) below.**

☐ Yes ☒ No

**a. If the grant is for new construction, will all new facilities or alterations to existing facilities be designed and constructed to be readily accessible to and usable by persons with disabilities? If yes, proceed to VII; if no, proceed to VI(b).**

☐ Yes ☒ No

**b. If the grant is for new construction and the new facilities or alterations to existing facilities will not be readily accessible to and usable by persons with disabilities, explain how a regulatory exception (40 C.F.R. 7.70) applies.**

| | | |
|---|---|---|
| **VII. Does the applicant/recipient provide initial and continuing notice that it does not discriminate on the basis of race, color, national origin, sex, age, or disability in its program or activities? (40 C.F.R 5.140 and 7.95)** | ☒ Yes | ☐ No |
| **a. Do the methods of notice accommodate those with impaired vision or hearing?** | ☐ Yes | ☒ No |
| **b. Is the notice posted in a prominent place in the applicant's offices or facilities or, for education programs and activities, in appropriate periodicals and other written communications?** | ☒ Yes | ☐ No |
| **c. Does the notice identify a designated civil rights coordinator?** | ☒ Yes | ☐ No |
| **VIII. Does the applicant/recipient maintain demographic data on the race, color, national origin, sex, age, or handicap of the population it serves? (40 C.F.R. 7.85(a))** | ☐ Yes | ☒ No |
| **IX. Does the applicant/recipient have a policy/procedure for providing access to services for persons with limited English proficiency? (40 C.F.R. Part 7, E.O. 13166)** | ☒ Yes | ☐ No |

**X. If the applicant is an education program or activity, or has 15 or more employees, has it designated an employee to coordinate its compliance with 40 C.F.R. Parts 5 and 7? Provide the name, title, position, mailing address, e-mail address, fax number, and telephone number of the designated coordinator.**

Less that 15 employees

**XI. If the applicant is an education program or activity, or has 15 or more employees, has it adopted grievance procedures that assure the prompt and fair resolution of complaints that allege a violation of 40 C.F.R. Parts 5 and 7? Provide a legal citation or Internet Address for, or a copy of, the procedures.**

Less than 15 employees

**For the Applicant/Recipient**

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law. I assure that I will fully comply with all applicable civil rights statutes and EPA regulations.

| A. Signature of Authorized Official | B. Title of Authorized Official | C. Date |
|---|---|---|
| Jerome Shabazz | Executive Director | 03/25/2022 |

**For the U.S. Environmental Protection Agency**

I have reviewed the information provided by the applicant/recipient and hereby certify that the applicant/recipient has submitted all preaward compliance information required by 40 C.F.R. Parts 5 and 7; that based on the information submitted, this application satisfies the preaward provisions of 40 C.F.R. Parts 5 and 7; and that the applicant has given assurance that it will fully comply with all applicable civil rights statures and EPA regulations.

| A. *Signature of Authorized EPA Official | B. Title of Authorized Official | C. Date |
|---|---|---|
| | | |

*** See Instructions**

Instructions for EPA FORM 4700-4 (Rev. 06/2014)

General. Recipients of Federal financial assistance from the U.S. Environmental Protection Agency must comply with the following statutes and regulations.
Title VI of the Civil Rights Acts of 1964 provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. The Act goes on to explain that the statute shall not be construed to authorize action with respect to any employment practice of any employer, employment agency, or labor organization (except where the primary objective of the Federal financial assistance is to provide employment). Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. Section 504 of the Rehabilitation Act of 1973 provides that no otherwise qualified individual with a disability in the United States shall solely by reason of disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. Employment discrimination on the basis of disability is prohibited in all such programs or activities. The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation under any program or activity receiving Federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission. Title IX of the Education Amendments of 1972 provides that no person in the United States on the basis of sex shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal institution. 40 C.F.R. Part 5 implements Title IX of the Education Amendments of 1972. 40 C.F.R. Part 7 implements Title VI of the Civil Rights Act of 1964, Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act, and Section 504 of The Rehabilitation Act of 1973. The Executive Order 13166 (E.O. 13166) entitled; "Improving Access to Services for Persons with Limited English Proficiency" requires Federal agencies work to ensure that recipients of Federal financial assistance provide meaningful access to their LEP applicants and beneficiaries.

Items "Applicant" means any entity that files an application or unsolicited proposal or otherwise requests EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Recipient" means any entity, other than applicant, which will actually receive EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Civil rights lawsuits and administrative complaints" means any lawsuit or administrative complaint alleging discrimination on the basis of race, color, national origin, sex, age, or disability pending or decided against the applicant and/or entity which actually benefits from the grant, but excluding employment complaints not covered by 40 C.F.R. Parts 5 and 7. For example, if a city is the named applicant but the grant will actually benefit the Department of Sewage, civil rights lawsuits involving both the city and the Department of Sewage should be listed. "Civil rights compliance review" means any review assessing the applicant's and/or recipient's compliance with laws prohibiting discrimination on the basis of race, color, national origin, sex, age, or disability. Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial application submission. If any item is not relevant to the project for which assistance is requested, write "NA" for "Not Applicable." In the event applicant is uncertain about how to answer any questions, EPA program officials should be contacted for clarification. * Note: Signature appears in the Approval Section of the EPA Comprehensive Administrative Review For Grants/Cooperative Agreements & Continuation/Supplemental Awards form.

## Other Attachment File(s)

*** Mandatory Other Attachment Filename:** 1234-EPA Community Air _ JASTECH Development _ Ove

Add Mandatory Other Attachment | Delete Mandatory Other Attachment | View Mandatory Other Attachment

To add more "Other Attachment" attachments, please use the attachment buttons below.

Add Optional Other Attachment | Delete Optional Other Attachment | View Optional Other Attachment

## Project Narrative File(s)

*** Mandatory Project Narrative File Filename:** 1235-EPA Community Air _ JASTECH Development _ Overbro

Add Mandatory Project Narrative File | Delete Mandatory Project Narrative File | View Mandatory Project Narrative File

To add more Project Narrative File attachments, please use the attachment buttons below.

Add Optional Project Narrative File | Delete Optional Project Narrative File | View Optional Project Narrative File

# BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2022

## SECTION A - BUDGET SUMMARY

| Grant Program Function or Activity (a) | Catalog of Federal Domestic Assistance Number (b) | Estimated Unobligated Funds | | New or Revised Budget | | |
|---|---|---|---|---|---|---|
| | | Federal (c) | Non-Federal (d) | Federal (e) | Non-Federal (f) | Total (g) |
| 1. Breathe Right Project | | $ | $ | $ 333,121.00 | $ | $ 333,121.00 |
| 2. | | | | | | |
| 3. | | | | | | |
| 4. | | | | | | |
| 5. Totals | | $ | $ | $ 333,121.00 | $ | $ 333,121.00 |

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## SECTION B - BUDGET CATEGORIES

| 6. Object Class Categories | GRANT PROGRAM, FUNCTION OR ACTIVITY (1) Breathe Right Project | (2) | (3) | (4) | Total (5) |
|---|---|---|---|---|---|
| a. Personnel | $ 56,680.00 | $ | $ | $ | $ 56,680.00 |
| b. Fringe Benefits | 10,960.00 | | | | 10,960.00 |
| c. Travel | 450.00 | | | | 450.00 |
| d. Equipment | 0.00 | | | | 0.00 |
| e. Supplies | 13,002.00 | | | | 13,002.00 |
| f. Contractual | 26,500.00 | | | | 26,500.00 |
| g. Construction | 0.00 | | | | 0.00 |
| h. Other | 215,529.00 | | | | 215,529.00 |
| i. Total Direct Charges (sum of 6a-6h) | 323,121.00 | | | | $ 323,121.00 |
| j. Indirect Charges | 10,000.00 | | | | $ 10,000.00 |
| k. TOTALS (sum of 6i and 6j) | $ 333,121.00 | $ | $ | $ | $ 333,121.00 |
| | | | | | |
| 7. Program Income | $ 0.00 | $ | $ | $ | $ 0.00 |

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## SECTION C - NON-FEDERAL RESOURCES

| (a) Grant Program | (b) Applicant | (c) State | (d) Other Sources | (e)TOTALS |
|---|---|---|---|---|
| 8. Breathe Right Project | $ 0.00 | $ 0.00 | $ 0.00 | $ 0.00 |
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. TOTAL (sum of lines 8-11) | $ 0.00 | $ 0.00 | $ 0.00 | $ 0.00 |

## SECTION D - FORECASTED CASH NEEDS

| | Total for 1st Year | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| 13. Federal | $ 189,013.00 | $ 37,800.00 | $ 49,150.00 | $ 50,000.00 | $ 52,063.00 |
| 14. Non-Federal | $ | | | | |
| 15. TOTAL (sum of lines 13 and 14) | $ 189,013.00 | $ 37,800.00 | $ 49,150.00 | $ 50,000.00 | $ 52,063.00 |

## SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

| (a) Grant Program | FUTURE FUNDING PERIODS (YEARS) (b)First | (c) Second | (d) Third | (e) Fourth |
|---|---|---|---|---|
| 16. Breathe Right Project | $ 144,108.00 | $ | $ | $ |
| 17. | | | | |
| 18. | | | | |
| 19. | | | | |
| 20. TOTAL (sum of lines 16 - 19) | $ 144,108.00 | $ | $ | $ |

## SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges: 323121

22. Indirect Charges: 100000

23. Remarks:

OMB Number: 4040-0004
Expiration Date: 12/31/2022

## Application for Federal Assistance SF-424

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received: 03/25/2022

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

**State Use Only:**

6. Date Received by State:

7. State Application Identifier:

**8. APPLICANT INFORMATION:**

* a. Legal Name: JASTECH Development Services, Inc

* b. Employer/Taxpayer Identification Number (EIN/TIN): 23-294364

* c. Organizational DUNS: 1507143630000

**d. Address:**

* Street1: 6134 Lancaster Avenue
Street2:
* City: Philadelphia
County/Parish:
* State: PA: Pennsylvania
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 19151-3226

**e. Organizational Unit:**

Department Name: Overbrook Environmental Ed Ctr

Division Name:

**f. Name and contact information of person to be contacted on matters involving this application:**

Prefix: Mr.
* First Name: Jerome
Middle Name:
* Last Name: Shabazz
Suffix:

Title: Executive Director

Organizational Affiliation:

* Telephone Number: 215.879-7770
Fax Number:

* Email: jshabazz@overbrookcenter.org

## Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

M: Nonprofit with 501C3 IRS Status (Other than Institution of Higher Education)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Environmental Protection Agency

**11. Catalog of Federal Domestic Assistance Number:**

66.034

CFDA Title:

Surveys, Studies, Research, Investigations, Demonstrations, and Special Purpose Activities Relating to the Clean Air Act

*** 12. Funding Opportunity Number:**

EPA-OAR-OAQPS-22-01

* Title:

Enhanced Air Quality Monitoring for Communities

**13. Competition Identification Number:**

Title:

**14. Areas Affected by Project (Cities, Counties, States, etc.):**

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

The project is a community air monitoring and awareness project targeted in an environmental justice community that will monitor five criteria air pollutants and analyze several heavy metals.

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

## Application for Federal Assistance SF-424

**16. Congressional Districts Of:**

* a. Applicant: 3rd
* b. Program/Project: 3rd

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

**17. Proposed Project:**

* a. Start Date: 11/01/2022
* b. End Date: 11/01/2024

**18. Estimated Funding ($):**

| | |
|---|---|
| * a. Federal | 333,121.00 |
| * b. Applicant | 0.00 |
| * c. State | 0.00 |
| * d. Local | 0.00 |
| * e. Other | 0.00 |
| * f. Program Income | 0.00 |
| * g. TOTAL | 333,121.00 |

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

**21. *By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

**Authorized Representative:**

Prefix: Mr. * First Name: Jerome

Middle Name:

* Last Name: Shabazz

Suffix:

* Title: Executive Director

* Telephone Number: 215.879-7770 Fax Number:

* Email: jshabazz@overbrookcenter.org

* Signature of Authorized Representative: Jerome Shabazz * Date Signed: 03/25/2022

Manifest for Grant Application # GRANT13580602

Grant Application XML file (total 1):

1. GrantApplication.xml. (size 24350 bytes)

Forms Included in Zip File(total 6):

1. Form ProjectNarrativeAttachments_1_2-V1.2.pdf (size 16044 bytes)

2. Form SF424_3_0-V3.0.pdf (size 24198 bytes)

3. Form SF424A-V1.0.pdf (size 22838 bytes)

4. Form EPA4700_4_3_0-V3.0.pdf (size 22695 bytes)

5. Form OtherNarrativeAttachments_1_2-V1.2.pdf (size 15924 bytes)

6. Form EPA_KeyContacts_2_0-V2.0.pdf (size 37306 bytes)

Attachments Included in Zip File (total 3):

1. SF424_3_0 SF424_3_0-AdditionalProjectTitle-1236-EPA Community Air _ JASTECH Development _ Overbrook 2022.pdf application/pdf (size 15218454 bytes)

2. ProjectNarrativeAttachments_1_2 ProjectNarrativeAttachments_1_2-Attachments-1235-EPA Community Air _ JASTECH Development _ Overbrook 2022.pdf application/pdf (size 15218454 bytes)

3. OtherNarrativeAttachments_1_2 OtherNarrativeAttachments_1_2-Attachments-1234-EPA Community Air _ JASTECH Development _ Overbrook 2022.pdf application/pdf (size 15218454 bytes)

## I. Cover Page

**Project Title:** Overbrook Breathe Right Community Air Monitoring Project (*Breathe Right*)

**Applicant Information:**

- Applicant Organization: JASTECH Development Services, Inc. / Overbrook Environmental Education Center
- Address: 6134 Lancaster Avenue - Philadelphia, PA 19151
- Primary Contact: Jerome Shabazz – (215) 519-8532, jshabazz@overbrookcenter.org
- DUNS Number: 150714363000

**Set-Aside: Community-based organization set-aside:** JASTECH is a 501 (c) (3) not for profit, PA Corporation. JASTECH/ Overbrook Environmental Education Center serves an Environmental Justice Community. The Overbrook neighborhood is a majority Black neighborhood with historical environmental pollutants from industry. Overbrook was ranked 38 out of 46 in terms of negative health outcomes in neighborhoods, high incidence of asthma, hypertension, obesity and diabetes in *Health of Philadelphia Neighborhoods (2019)*.

**Applicant Organization:** JASTECH was established in 1997, with a mission to promote environmental justice, sustainable communities, and equitable community health resources in the Philadelphia region. In 2002, JASTECH established the Overbrook Environmental Education Center, a community-based center dedicated to ensuring environmentally and climate safe neighborhoods.

**Project Partners:** Villanova University; Academy of Natural Sciences of Drexel University

- **Partner Primary Contact Name**: Dr. Kabindra M. Shakya, kabindra.shakya@villanova.edu; Dr. Stefanie Kroll, Stefanie.a.kroll@drexel.edu

- **Primary Location:** Western Philadelphia – Zip codes: 19139, 19151, 19131 & 19104
- **Air Pollutant Scope:** This project will monitor five criteria air pollutants: $NO_2$ (Nitrogen dioxide), $SO_2$ (Sulfur dioxide), $O_3$ (Ozone), Pb (lead) and Particle Pollution (ultrafine, $PM_{2.5}$, or $PM_{10}$).

- **Budget Summary:**

| EPA Funding Requested | Total Project Cost |
|---|---|
| $333,121 | $333,121 |

- **Project Period: Beginning Date:** November 1, 2022, **Ending Date:** November 1, 2024

**Short Project Description:** The goal of the Overbrook Breathe Right Community Air Monitoring Project is to increase awareness of air pollution in targeted environmental justice communities of West Philadelphia. With the engagement of community members in the Overbrook / Wynnefield / Mill Creek / Mantua communities, the 'Breathe Right' project will monitor five criteria air pollutants and analyze several heavy metals including lead in $PM_{2.5}$ to better inform community members about the state of air pollution in their neighborhoods.

**II. Workplan:**

**1. A. Overall Project**

The primary goal of the proposed Breathe Right project is to monitor criteria air pollutants and increase awareness of air pollution in our targeted environmental justice community in West Philadelphia. The Breathe Right project aims to measure five criteria air pollutants: $PM_{2.5}$ (Particles smaller than 2.5 micrometers in aerodynamic diameter), $PM_{10}$ (Particles smaller than 10 micrometers), $NO_2$ (Nitrogen dioxide), $SO_2$ (Sulfur dioxide), $O_3$ (Ozone), and Pb (lead). We will also analyze Nitric oxide (NO) and $PM_{2.5}$ heavy metals such as As (Arsenic), Ba (Barium), Cr (Chromium), Cd (Cadmium), Co (Cobalt), Cu (Copper), Pb (lead), Mn (Manganese), Mo (Molybdenum), Ni (Nickel), Se (Selenium), V (Vanadium), Zn (Zinc). Analysis of five trace gases and particulate matter concentrations ($PM_{2.5}$ and $PM_{10}$) will help to inform the community about the state of air pollution in the neighborhoods. Additional chemical characterization of particulate matter (heavy metals including Pb) will help to assess emission sources and toxicity of particulate matter. Lead has been problematic throughout Philadelphia in air pollution throughout the city related to construction, among other activities.

The Breathe Right project is proposing two-year continuous sampling for $PM_{2.5}$ and $PM_{10}$ at 15 outdoor sites and an intensive, two-week campaign measuring trace gases from 15 outdoor sites per year. A four-week intensive measurement campaign will assess chemical characteristics of $PM_{2.5}$ (heavy metals) at one site each year. We will also measure $PM_{2.5}$, $PM_{10}$, and four trace gases from 5 co-located indoor environments.

Philadelphia has high asthma prevalence[i], high poverty rate and minority population[ii] and is considered as Environmental Justice Community. US EPA's EJ Screen shows it has high $PM_{2.5}$, high asthma prevalence, and high minority population (Figure 1). Previous study in Philadelphia has showed that air pollution varies across the Philadelphia neighborhoods[iii].

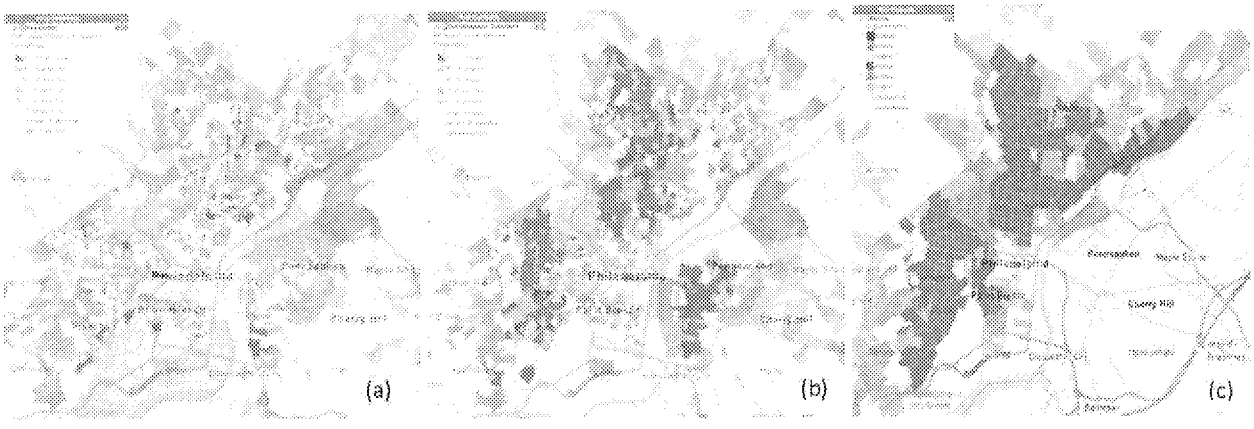


*Figure 1. US EPA's EJ Screen Map of Philadelphia. (a) $PM_{2.5}$ Percentiles. (b) Asthma Prevalence (c) Percentage of color.*

**1. B. Project Significance**

Although there are central monitors measuring air pollution in Philadelphia, they may not represent the actual exposures and risks faced by the minority communities. Particulate matter varies widely across the Philadelphia neighborhoods[iii]. Without direct participation and awareness about the effects of air pollution, it is less likely that local communities are aware of the state of air pollution. The current project is proposed to involve local community in taking the measurements from their

own backyards, which will increase their interest and knowledge in air pollution and in general environmental issues. The proposed project will share the results in community meetings in the neighborhood once per year in meetings and on the OEEC website. Neighborhood community meetings will be organized to. Additionally, we will develop a website for residents to check the status of air pollution. We intend to initiate the level of community engagement that will enable interested community members to continue monitoring air pollution after the two-year project period, using the purple air monitors.

We will compare the community air pollution data with the EPA central monitoring station and will prepare air quality maps using Geographic Information System (GIS). We will also analyze how the air pollution vary across the neighborhoods with respect to distance to the pollution sources (e.g., industries, incinerators, and highways). The significance of this program is that it will leverage JASTECH and Villanova University's existing air quality monitoring expertise, expand use of community monitoring advisory groups and other approaches that give the community a voice in the monitoring of their air quality, while building a foundation of trusting relationships and enhanced understanding from which sustainable solutions to community air pollution problems can be found.
The EPA's 2022 Draft Strategic Plan sites that approximately 97 million Americans lived in counties with air quality concentrations above the level of one or more NAAQS in 2020.[iv] Studies show substantial disparities exist in $PM_{2.5}$-related risk between groups. Nonwhites, particularly blacks, are at increased risk for $PM_{2.5}$-related health effects, in part due to disparities in exposure.[v] One study estimated people of color were exposed to 25 percent higher $PM_{2.5}$ (as compared to the rest of the population) in 2014 from domestic anthropogenic sources.[vi] Neighborhoods with the highest poverty rates had 14 percent higher $PM_{2.5}$ levels in 2016 compared with neighborhoods with the lowest poverty rates.[vii] Multiple areas are disproportionately impacted by local sources emitting air toxics, and the scientific understanding of health risks related to exposure to air toxics continues to emerge.

All people regardless of race, color, national origin, or income deserve to breathe clean air, and it is especially important that the nation's laws protect the health of vulnerable and sensitive populations, such as children and those with preexisting respiratory conditions. Over the next four years, EPA will work collaboratively with air agencies to maintain and improve the nation's air quality. EPA will particularly focus on advancing environmental justice by engaging with communities on key activities including technical assistance, regulation development, and financial assistance. Thus, our project will provide data that the EPA can use for these activities.

**2. A. Community Partnerships**

Breathe Right will benefit the West Philadelphia community by improving the availability, access, and timeliness of air quality data that effectively integrates community air quality data with data from the network of "regulatory" air monitoring stations for evaluating compliance and for permitting decisions. This project is aligned with the EPA's Draft Strategic Plan's – Goal # 4: Ensure Clean and Healthy Air for All Communities. The agency's plan shows substantial disparities in $PM_{2.5}$-related risk between groups. Non-whites, particularly Black citizens, are at increased risk for $PM_{2.5}$-related health effects, in part due to disparities in exposure.

The project will establish a collaborative Working Group with West Philadelphia community members from our targeted zip codes (19151, 19131, 19139, 19104), Villanova University, Academy of Natural Sciences at Drexel University, and other natural stakeholders. Together we will embrace a community-driven approach, for neighborhood-level public participation in community environmental

empowerment. All community stakeholders will be invited to join the Working Group to facilitate public participation, emphasize cooperation and collaboration, especially during the early stages of project development. The Working Group will get community input on where to locate the sensors. The project's objective is to provide a more comprehensive understanding of community needs.

All Breathe Right partners have vested interests in supporting environmental health in West Philadelphia communities. Their participation will support the project's environmental statutes under the Clean Air Act, Section 103(b)(3); and Toxic Substances Control Act, Section 10(a). Villanova University, led by Dr. Kabindra Shakya, Assistant Professor of Environmental Science, is the subaward project manager and responsible for the subaward portion of the proposed work. He will provide oversight on the project to install air pollution instruments, collect samples, and analyze the samples in lab. Dr. Shakya will mentor, and train undergraduate students involved in the project, as well as coordinate and have regular meetings with JASTECH/Overbrook Center to design the sampling, collect samples, and communicate the findings to the community. His graduate students will serve two primary roles in supporting the community: 1) will assist in creating a computer visualization tool to display air quality data in a user-friendly manner from the findings of the air monitoring, and 2) will assist in retrieving data from air monitors.

Our partners at the Academy of Natural Sciences (ANS) and Drexel University, headed by Dr. Stefanie Kroll, have extensive experience in environmental research, education, and management. ANS and Drexel's participation will support community-based participatory project that will produce actionable data to address community environmental and health needs within a social justice context. Dr. Kroll will help to interpret, translate and create the visualization of project data both for direct engagement and in formats that are accessible to the partner communities for further action. Dr. Tran Huynh will also analyze data and provide outreach materials related to health risks of interior and exterior air pollution.

Drexel will also help to pilot and assess a repeatable delivery model for participatory research projects that meet the needs of under-resourced communities. The Breathe Right project will 1.) expand Drexel's capacity to support climate change resilience in under-resourced communities and 2.) operationalize environmental justice as a core institutional value. Drs. Kroll and Huynh and ANS's Community Engagement Team will support Breathe Right's objectives by facilitating citizen-science in Overbrook using the best practices for monitoring air quality in their homes and community.

**2. B. Community Engagement:** The Breathe Right project will use five goals to engage community members and to implement a replicable pilot program that fulfils community-identified needs for monitoring air pollution exposures. A Community Advisory Board (CAB) will also be formed to assist in the outreach and identification of monitoring sites in zip codes 19131, 19151, 19139 & 19104:

**Goal (1)** will form a Community Advisory Board to participate in the healthy neighborhood campaign process; the Project Manager will work with project partners to identify key community leaders who will serve as an Advisory Board and help guide the campaign process. Key community stakeholders may be representatives from Lebanon Avenue and 62$^{nd}$ Street Block Associations, University of Pennsylvania's Center for Excellence in Toxicology, Academy of Natural Sciences of Drexel University, Villanova University, the faith community, recreation centers, the business community, area schools, and environmentally-focused neighborhood groups and non-profit organizations. The Community Advisory Board will aid in identifying target behaviors, establishing community channels for exchange of information, establishing credibility of the project, and building future community capacity for

addressing environmental health challenges and reducing air pollution exposures. The Project Manager and Project Coordinator will interact formally and informally with the Community Advisory Board, including one on one discussion and group meetings. Identification of key community leaders will be an ongoing process and the network of participation will grow throughout the project.

**Goal (2)** will conduct focus groups to identify key behavior targets and better understand audience perceptions of barriers and benefits of key behavioral targets. The Focus groups will include students from Villanova and Drexel as well as adult community residents, who will determine which behaviors and what demographic will be targeted in the campaign, driven by the residents. The Project Manager and Project Coordinator will recruit focus group participants using purposeful and snowball sampling, through flyers, emails, phone, and face-to-face contact. Focus group administration will continue until theoretical saturation is reached, which we estimate will be three to five groups. Focus groups will be conducted at the Overbrook Environmental Education Center, Villanova and Drexel, and will be moderated by the Project Manager and Project Coordinator. Focus groups will last approximately 90 minutes and responses will be documented per the agreement of interviewees. Participants will receive incentives for their work in the focus groups and light refreshments will be served. Focus group questions will determine their perceptions of barriers and benefits of protecting Healthy Homes through behaviors in and around the house that impact Air Quality & Asthma. The Focus Group questions will also be used to determine audience perceptions of factors that reduce or improve interior and exterior air quality. The Project Manager and Project Coordinator will compile focus group notes and transcribe the recordings, ensuring the anonymity of participants. These data will be reviewed by the Project Manager, Project Coordinator, project partners, and Community Advisory Working Group to determine which behaviors to target in the campaign regarding what strategies and tactics might be most successful in affecting behavioral change. Focus groups will also help determine credible spokespersons and community leadership though which future channels of communication on environmental best management practices can be disseminated beyond this project period.

The third **Goal (3)** will develop and implement a community-based campaign. This goal will utilize existing environmental health resources (e.g., EPA Nonpoint Source Outreach Toolbox, OEEC Community Environmental Education Programs, EPA, CDC, and Ad Council Lead Poisoning Prevention Outreach materials), as appropriate, for maximum participant engagement. The focus group process and input from the Community Advisory Working Group will determine which behavioral targets and target audience the campaign will address. This campaign will address three to five behaviors that will be conceptually grouped together for campaign cohesion and to increase effort effectiveness. Once targets are identified, the campaign can be developed. This campaign will utilize a community-based social marketing framework. Social marketing uses the strategies and techniques of commercial marketing to "sell" pro-social behavior. Social marketing uses formative research to better understand the target and competing behaviors from the perspective of the target audience.

Specifically, what do they perceive to be the barriers and benefits of the target and competing behavior? How can the marketing mix (product, place, promotion, and price) be used to design an exchange that will increase perceptions of benefits and decrease barriers of the target behavior? Community-based social marketing uses information gathered during the formative process to identify which combination of tools to use in the intervention, which may include incentives, commitment, prompts, feedback, school or work-based programs, communication, gaining public

commitment, using prompts as a reminder to do the behavior, and removing barriers to behavior. Because of the emergent design of the project and the role of the formative process, exact campaign details cannot be determined in advance.

**Goal (4)** will implement Overbrook Breathe Right Community Air Monitoring Project. This goal will various instruments to measure air quality. PM measurement: PM2.5 and PM10 will be measured using PurpleAir PA-II-SD sensors (PurpleAir, Inc.) for outdoor air and PurpleAir PA-I-Indoor (PurpleAir, Inc.) for indoor air. Purple air measures and records PM concentrations on 10 second intervals. Purple air sensors require electricity, so it will be attached to the wall of the house or the fence in the backyard of the house. Purple air monitors will be installed throughout the monitoring period of about one and half years except when the samplers are brought for calibration for co-locating with EPA Federal Reference Method. Trace gas measurement: $NO_2$, Nitrogen oxides (NOx), $SO_2$, and $O_3$ will be measured using passive samplers (Ogawa USA). Passive samplers will be enclosed in protective rain shelters and gas specific Ogawa pre-coated pads will be used for the respective gases. Ogawa passive samplers will be installed either on the fence or the poles that has free movement of air. Passive sampling of trace gases will be conducted for two weeks every year (a total of four weeks) at each of the sites. Filters will be changed every week so the average weekly concentration of gases will be obtained. Lead and other heavy metals measurement: One outdoor $PM_{2.5}$ air sampler (PQ100, Mesa Labs) will be installed for four weeks. PTFE filters will be changed every day and will be stored inside refrigerator till the time of analysis. The filters will be extracted with acid using microwave acid digestion and the extract will be analyzed using Inductively Coupled Plasma Mass Spectrometry (ICP-MS) at Villanova University.

The OEEC will structure educational and outreach programs designed to meet community needs in promoting environmental literacy and core science principles. Drexel has extensive experience in environmental research, education, and management. ANS participation will support a community-based participatory project that will produce actionable data to address community environmental and health needs within a social justice context. Scientists from ANS and Drexel's Dornsife School of Public Health will provide translation and visualization of project data both for direct engagement in formats accessible to partner communities to act.

Overbrook community participants will be supported to collect data and maintain equipment data on heat, humidity, and particulate matter in both indoor and outdoor environments. The resulting data will be used to address questions of indoor air quality, heat stress, and heat vulnerability, among others. ANS is also committed to providing staff-time to the Overbrook Environmental Education Center (OEEC), and this project. ANS will lead community science and Drexel student participation to assess the extent of air pollution and community health implications.

**The final Goal (5)** will invite the community to identify future environmental health priorities. The Project Manager and Project Coordinator will recruit a Program Evaluator to examine the evaluate the medium, and long-term goals of the project. The evaluator will examine work plans for each goal and alignment with the logic model at the beginning of the project. Once the project begins, the evaluator will join meetings every 6 months to provide feedback on what aspects of the logic model are in place and progressing as proposed, where additional work is needed, where improvements to the approach may be needed and implemented, and overall assessment of progress and needs for adaptive management. The evaluator's reports from the beginning and at the end of the project will

be shared with all partners and the EPA as part of the project outputs. The Project Manager and Project Coordinator will also develop a final report and executive summary written for the target audience. This report will be made available through the OEEC and key community partners, and community residents will be invited to attend a public wrap-up presentation to discuss the campaign and address future environmental health priorities. A similar version of the survey, minus the campaign assessment questions, will be administered to 50 adult community residents in a control-community, to address potential threats to validity. Participation in the survey will be incentivized. The surveys will be analyzed, and the results will be shared with key community stakeholders and partners. The Project Manager will submit a final report to the EPA's Region III Project Officer on the project's progress and for approval within ninety (90) days after the end of the project period. Community Advisory Board members will also invite neighbors to from West Philadelphia to participate in community-led air quality and monitoring projects that include the installation of air monitors in approximately 15 neighborhood locations.

**2. C. Community-Based Organization Set-Aside:** Through extensive community engagement with neighbors in the Overbrook community, JASTECH/ OEEC developed an Analysis of Brownfields Cleanup Alternatives (ABCA), for the two-acre OEEC site on 6100 block Lancaster Avenue. Records review of the site indicates that historically, the site was built on the Reilly's Rock Quarry. The Lancaster Avenue site is in a mixed-use community, bordered by 51 homes on Lebanon Avenue (east) and 45 residential homes and Overbrook Elementary School on North 62nd Street (west). The building at 6150 Lancaster Avenue is current vacant and the fenced-in yard were previously occupied by the A & P (Atlantic & Pacific) Supermarket, Philadelphia Building Supply Company, Inc., who operated as a building supply business providing such items as gravel, sand, stone, lumber, brick, concrete, pesticides, and building supplies.

PI Shabazz has led the successful implementation of 2 policies requiring property owners to obtain lead-free certification for 1. Homes rented to children (2012) and 2. Any home with a new or renewed rental lease (2019), Philadelphia Lead Paint Disclosure & Certification Law (Philadelphia Code Section 6-800). However, there is little guidance on how this law will be implemented. JASTECH, under Mr. Shabazz's direction has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and as a result, has received accreditation to conduct lead-based paint training pursuant to 40 CFR Part 745.225 for Renovator, Repair and Paint (RRP) training, and has trained hundreds of community renovators on lead-safe contractor work in home renovations.

**3. Environmental Justice and Underserved Communities:** The benefits of this project relative to asthma and other health issues are clear. Knowledge of air pollution risks and exposure allow for greater community advocacy and action with city and federal agencies to better regulate air pollution. Collaborative data collection, analysis and interpretation with the universities provides knowledge and resources for community members to use to create change.

The Overbrook neighborhood has a population of roughly 43,172 people, and its geography is an important part of its demographics; Overbrook is in an environmental justice neighborhood in Philadelphia, Pennsylvania. The City of Philadelphia, population of 1.5 million people, produced the *Health of Philadelphia Neighborhoods (2019)* report, and ranks the Overbrook area as 38 out of 46 in terms of negative health outcomes in neighborhoods. An estimated 45% of residents have been diagnosed with hypertension, 43% have adult obesity, and 18% have diabetes. Hypertension, obesity,

and diabetes are diseases that can be managed and prevented through diet and exercise. Greater than normal incidence of disease and adverse health conditions are identified in this community. According to the University of Pennsylvania's Center of Excellence in Environmental Toxicology, the **aging housing stock, deteriorating infrastructure, and brownfields** also pose ongoing environmental health hazards in West Philadelphia[1].

The adverse health impacts facing Overbrook and other West Philadelphia neighborhoods (zip codes 19131, 19139 and 19151) include asthma, lead poisoning, and chemical exposure from former industrial sites. Asthma rates in Philadelphia are 2-3 times higher than other counties in the Commonwealth of Pennsylvania. In Overbrook, 14% of residents have asthma, a rate that is significantly higher than the 11% for Philadelphia. Cancer incidence and death rates for Pennsylvania are greater than the national averages, and the rate of cancer incidence among West Philadelphia residents is 5.6%, slightly higher than Philadelphia's average rate of 4.9%. Over 89% of homes in Overbrook were built before 1978, the lead risk exposure is in the mid-to-high lead levels[2]. In this area data shows that 4.7 – 6.8% of all children's blood lead levels (BLL) was higher than the Center Disease Control (CDC) designated "reference level" of > 5 µg/dL (Milgram per deciliter). Many of Overbrook's health challenges are exacerbated by poor access to fresh food produce, programming that promotes healthy nutrition and safe open green space for physical activity. Even the EPA's EJ Screen tool's, regional environmental indicators in air quality ($PM_{2.5}$), Ozone, NATA Diezel PM, NATA Cancer Risk, NATA Respiratory HI, Traffic Proximity, Lead Paint Indicator, and Superfund Proximity are at or above 75 population percentiles for this community.

Overbrook is a disproportionately impacted, low income, high poverty neighborhood. The median income of $37,768 is lower than Philadelphia's median income of $43,744. The unemployment rate (before the COVID-19 situation) for Overbrook (16.5%) was over double that for Philadelphia (7.7%). We expect the rate of unemployment has been strained even more through the COVID-19 situation. It is worth highlighting that a significant portion (31%) of the households in Overbrook have limited digital access which makes it difficult to access resources or search for employment. Over 26% of Overbrook residents must commute over an hour to work because of the limited employment opportunities available locally.

| *Demographic* | *Philadelphia* | *Overbrook* |
|---|---|---|
| Population | 1.58 million | 43,172 |
| Poverty Rate | 26% | 35% |
| % of persons under 18 years old | 22% | 25% |
| % of persons 65 and older | 13.2% | 17% |
| % of residents who are African American | 42% | 76.38% |
| Median Income | $46,116 | $37,768 |

[1] *http://ceet.upenn.edu/target-communities/target-communities-west-philadelphia/*
[2] *http://media.inquirer.com/storage/special_projects/Philadelphia_lead_risk_map.html*

**Section 4 – Environmental Results—Outcomes, Outputs and Performance Measures**

**4.A. Expected Project Outputs and Outcomes:** See Appendix C, Logic Model (attached)

Table 1. Air quality data expected to be available from this project

| Air pollutant | Method | Sampling | | |
|---|---|---|---|---|
| | | Sampling intervals | Sites | Duration |
| $PM_{2.5}$ and $PM_{10}$ | Purple Air | 10 seconds | 15 outdoor and 5 indoor | 18 months |
| $NO_2$, NO, $O_3$, and $SO_2$ | Ogawa Passive Samplers | 1 week | 15 outdoor and 5 indoor | 4 weeks |
| Lead and other heavy metals | PQ100 and ICP-MS | 24 hours | 1 outdoor site | 8 weeks |

**4. B. Performance Measures and Plan** - (See attached Logic Model)

The following performance measures will be tracked by the Project Manager and provided in reports to the EPA on project progress and results:

1. Number of Community members reached
2. Number of Outreach events
3. Amount of data analyzed
4. Meetings sharing data with stakeholders
5. Number of reports and scientific papers.
6. Number of Outreach materials developed.
7. Website providing near real-time data output
8. Number of visitors to data portal and website
9. Number of Presentations to local decision-makers on air pollution and reducing exposure

**4. C. Timeline and Milestones**

Table 2. Timeline for air quality measurement, analysis, calibration, and data reporting

| Milestone | First year (Q = quarter, three months) | | | | Second year (Q = quarter, three months) | | | |
|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Air quality instrument purchase preparation | | | | | | | | |
| **Particulate Matter** | | | | | | | | |
| Purple air calibration | | | | | | | | |
| Purple air measurement | | | | | | | | |
| **Trace gases ($NO_2$, NO, $O_3$, $SO_2$)** | | | | | | | | |
| Passive sampling of trace gases | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Lab Analysis of passive samplers | | | | | | | | |
| **Data analysis** | | | | | | | | |
| Data processing and visualization | | | | | | | | |
| Air quality mapping with GIS | | | | | | | | |
| **Data Dissemination** | | | | | | | | |
| Preparing data dissemination through website | | | | | | | | |
| Presentation at regional and national conference | | | | | | | | |
| Preparation and submission of two manuscripts: one focusing on trace gases and one focusing on PM variation and PM metal composition | | | | | | | | |

**Section 5 – Quality Assurance Statement:** Quality assurance and quality control aspects of the work will be conducted at Dr. Shakya's lab at Villanova University and EPA monitoring station at Philadelphia.

Calibration of purple air sensors: All purple air sensors will be operated together at the Villanova laboratory to check the precision by calculating the variability (as relative standard deviation) of the purple air monitors. Calibration of purple air sensors is conducted by (a) comparing the purple air sensors with gravimetric measurements and (b) by comparing with EPA's federal reference method. To check with gravimetric measurements, purple air sensors will be operated together with PQ100 sampler outdoor at Villanova University. PTFE filters will be pre-weighed with a microbalance after keeping the filters at about 20 °C and ~50% relative humidity. PTFE filters will be changed every 24 hours in PQ100. After keeping the filters at about 20 °C and ~50% relative humidity, filters will be post-weighed using a microbalance. The gravimetric measurements will be used to check the accuracy of purple air sensor's measurement of $PM_{2.5}$. Purple air sensors will also be installed at Philadelphia EPA monitoring station to compare $PM_{2.5}$ and $PM_{10}$ measurements against EPA's federal reference method. Dr. Shakya has completed an agreement with Air Management Laboratory at Philadelphia to co-locate air quality monitors from Dr. Shakya's lab at EPA laboratory in Philadelphia. These calibrations will be conducted three times during the project period (See Table 2). Accuracy, precision, and the influence of environmental factors such as temperature and humidity will be obtained for PM measurements. Statistical analysis will be conducted, and uncertainty factors will be reported, and a correction factor will be applied to PM measurement from purple air sensors.

Calibration of Ogawa passive samplers: At each of 15 sites, duplicate passive samplers will be used to estimate the precision of the measurements. Three lab blanks and three field blanks will be used to estimate the uncertainty and correct the gases measured by Ogawa passive samplers. Passive samplers for $NO_2$, NOx, and $O_3$ will be co-located together with EPA Federal Equivalent Method (FEM) instruments Model 202 Ozone Monitor and Model 405 $NO_2$/NO/NOx monitor (2B Technologies) at Villanova University for two weeks. In addition to co-location at Villanova University, all passive samplers will be installed at Philadelphia EPA monitoring station. Measurement by passive samplers will be compared with EPA equivalent methods and an uncertainty factor will be reported for the measurement of gases by passive sampling method.

Calibration of lead and metals: Five blank PTFE filters will be used. Blanks will also be used during every run of extraction by microwave acid digestion method. These will be used to correct and reported as the uncertainty of measurement of heavy metals. Standard calibration protocols, instrumental checks, and data processing will be used for analyzing heavy metals by ICP-MS. Standard Reference Material (SRM 1648a – Urban particulate matter) will also be analyzed by the same acid extraction method in nitric acid and hydrogen peroxide[viii] to estimate the recovery of metal analysis.

## Section 6 – Programmatic Capability and Past Performance

**A. Past Performance:**

JASTECH Development Services/OEEC has received renewal EPA certification to provide 40 CFR 745, Subpart E, RRP training. With this certification, JASTECH has trained 250 students in RRP Lead Safe practices. In 2019, JASTECH received a PA Department of Environmental Protection Environmental Education Grant to produce and distribute educational materials on topics of Climate, Domestic Toxins, Air Quality and Water Quality. In 2021, JASTECH was awarded an EPA Brownfields Cleanup grant under the Comprehensive Environmental Response, Comprehensive and Liability Act (CERCLA), Section 104 (k). Dr. Shakya is co-PI on National Science Foundation grant (#1832407 - $200,007; 2018-2023) that successfully measured air pollution across Philadelphia. About 8 presentations have been made and four manuscripts[ix,x,xi,xii] have been published from the work. **Dr. Shakya** is a lead-PI on National Institutes of Health grant to study cellular effects of particulate matter at underground subways in Philadelphia (#R15ES032588 - $346,692; 2021-2024). **Dr. Kroll** is PI on 2 projects funded by the National Fish and Wildlife Foundation involving community science to collect data on stream health to inform watershed conservation activities (2020-2022, #70607, $ $280,955.86, non-federal; 2020-2023, #70607, $327,500, federal). She is co-PI with Mr. Shabazz on a pilot project to evaluate exposure pathways to lead in West Philadelphia (2022-2023, Glenmede Foundation, $20,000). She has been awarded approximately $12,000,000 in funding to support the work of the Patrick Center for Environmental Research over the past decade.

**B. Reporting Requirements**: Project organization OEEC and scientists at ANS, Drexel and Villanova have met report requirements for all past and current projects in terms of timeline and technical content. Technical reports and outreach materials will be generated using the data collected, which will be submitted to EPA and documented in our final report. The Community Advisory Board will have a presence on the Overbrook Environmental Education Center's website, with activity updates and contact details. Outreach materials will be available on the OEEC and Academy of Natural Sciences websites as well. Research performed by university students will be linked as reports and interpreted materials on these websites as well. The list of environmental health priorities will feature prominently on the project website page within the OEEC website. All outcomes will be documented in all reports, including the final report to the EPA.

**C. Staff Expertise:** Please see attached Resumes /Curricula vitae.

Jerome Shabazz, MS (PI), Dr. Kabindra M. Shakya (Villanova University), Dr. Stefanie Kroll (Drexel University), Jada Ackley (JASTECH), Sandra Rigberg (Intern)

## Section 7 – Budget A.

## Budget

| 1. Personnel / Title | Annual Salary | % of assigned time | Match | Cost |
|---|---|---|---|---|
| Project Manager | $95,000 | 10% | $9,500 | $9,500 |
| Project Coordinator | $60,000 | 12% | $6,000 | $7,200 |
| Community Support Leader | $29,000 | 16% | | $4,640 |
| Community Support Intern | $ 7,500 | 100% | | $7,500 |
| **Total Personnel Cost** (year one: $28,840 + year two $28,840) | | | | **$56,680** |

| 2. Position/Title | Fringe Benefit Rate | Personnel Cost | Total Fringe Benefit Cost |
|---|---|---|---|
| Project Manager | 19% | $9,500 | $1,805 |
| Project Coordinator | 19% | $7,200 | $1,368 |
| Community Support Leader | 19% | $4,640 | $ 882 |
| Community Support Intern | 19% | $7,500 | $1,425 |
| **Total Fringe Benefits** (year one: $5,480+ year two $5,480) | | | **$10,960** |

EPA Funds (Fringe)

| 3. Travel | |
|---|---|
| Local Milage for Project Manager (for partner meetings@ 62.5 miles x $0.30/mi x 24 events) | **$450** |

| 4. Equipment | |
|---|---|
| Equipment Purchase greater than $5,000) | $0 |

| 5. Supplies | |
|---|---|
| Stationary Supplies (i.e., flipcharts, pens, paper, etc.) | $1,250 |
| Air Quality Monitor (42 units @ $165 /each) (PM2.5, CO2, Temp.) | $6,930 |
| Overbrook Healthy Home Pamphlets (300 @ $3.74) | $1,122 |
| Lead Safety Children's Books (200 @ $6.00) | $1,200 |
| PocketLab Weather Sensors (25 units @ $100/each.) | $2,500 |
| **EPA Funds (Supplies)** | **$13,002** |

| 6. Contractual | |
|---|---|
| Telephone/Internet Research Services | $4,200 |
| Community Air Monitoring Training (70 people @ $225 per class.) | $15,750 |
| Graphics for Overbrook Healthy Home Pamphlets | $550 |
| Project Evaluator | $6,000 |
| **EPA Funds (Contractual)** | **$26,500** |

| 7. **Other** Subawards | |
|---|---|
| Academy of Natural Sciences (year one: $45k) (year two $40K) | $85,000 |
| Villanova University (year one: $83,192) (year two: $47,338) | $130,529 |
| **Subaward total** | **$215, 529** |
| **EPA Funds - Total Project Cost** | **$333,121** |

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[ii] Shakya, K. M., Kremer, P., Henderson, K., McMahon, M., Peltier, R. E., Bromberg, S., & Stewart, J. (2019). Mobile monitoring of air and noise pollution in Philadelphia neighborhoods during summer 2017. Environmental Pollution, 255, 113195.

[iii] (Shakya et al., 2019)

[iv] U.S. EPA. (October 1, 2021). Draft FY 2022-2026 EPA Strategic Plan. Washington, DC.

[v] Integrated Science Assessment (ISA) for Particulate Matter (Final Report, Dec 2019) (EPA/600/R-19/188) https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=347534.

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[xiii] Tessum, CW, Paolella, DA, Chambliss, SA, Apte, JS, Hill, JD, Marshall,

OFFICE OF
GRANTS AND CONTRACTS

## STATEMENT OF INTENT TO ESTABLISH A SUB-AGREEMENT

| | |
|---|---|
| Date: | 3/2/2022 |
| Project Title: | Community-based measurement of air pollution in Environmental Justice neighborhoods in Philadelphia |
| Funding Announcement: | EPA-OAR-OAQPS-22-01 |
| Funding Agency: | Environmental Protection Agency-EPA |
| Grantee Institution: | Overbrook Environmental Education Center |
| Grantee Principal Investigator: | Jerome Shabazz |
| Villanova Principal Investigator: | Kabindra Shakya |
| Proposed Project Period: | 01/01/2023 - 12/31/2025 |
| Proposed Total Villanova Budget: | $130,529 |

The Office of Research Administration has reviewed the enclosed proposal for completeness, accuracy, and compliance with VU's institutional policies and the policies of the sponsor named above. VU's appropriate programmatic and administrative personnel are aware of these grant policies and are prepared to establish the necessary inter-organizational agreement in accordance with those policies.

This budget has been approved by Villanova University's Office of Research and may not be changed without prior approval by Villanova University.

In signing below, VU certifies that it has implemented and is enforcing a written policy of Conflict of Interest consistent with the provisions of 42 CFR Part 50, Subpart F and 45 CFR Subtitle A, Part 94 and that at this time there is no real or apparent conflict of interest as defined by these regulations in connection with this project. VU also certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from receiving funds from any Federal department or agency; it is not delinquent on any Federal debt; it is in compliance with the Drug Free Workplace Act of 1988; it is in compliance with 42 CFR par 50 (Objectivity in Research) regarding financial conflict of interest; no Lobbying was performed with regard to the proposal; and assurances are on file for Misconduct in Science, Civil Rights, Handicapped Individuals, Sex Discrimination and Age Discrimination.

If there are questions regarding this proposal, contact the Office of Research Administration at (610) 519-4220 or ResAdmin@villanova.edu.

Moira McAndrews

Digitally signed by Moira McAndrews
Date: 2022.03.04 11:56:09 -05'00'

Moira McAndrews, MBA, CRA
Director, Office of Grants and Contracts
Villanova University

3/4/2021
Date

**Statement of Work**
**Villanova University**
**Subaward PI: Kabindra Shakya**

The proposed project will monitor air pollution around Philadelphia neighborhoods in partnership with the community organization: Overbrook Environmental Education Center at Philadelphia. This organization is the lead in the proposed project, who will be responsible for communicating the findings on air pollution and bringing awareness of air pollution issues to the community.

Dr. Shakya will oversee and lead the project to monitor the air pollution. His group will be responsible for purchasing the instruments, calibrating the instruments, taking the samples, laboratory analysis, and data analysis.

Several undergraduate students will be involved in the project, and semester and summer stipends are requested for the students. Undergraduate students will assist in data collection, lab analysis, data analysis and visualization, and Geographic information System to map air pollution data.

| | Budget Items | YEAR 1 1/1/23 - 12/31/24 | YEAR 2 1/1/24 - 12/31/25 | Total Project |
|---|---|---|---|---|
| Salary & Wages | | | | |
| | FT - Subaward Proj Manager: Shakya, Kabin | 8,995 | 9,265 | 18,259 |
| (no fringe) | Graduate Student Assistant (hourly) | 2,520 | 2,520 | 5,040 |
| Total Salaries & Wages | | 11,515 | 11,785 | 23,299 |
| 25.38% | FT-Fringe Total | 2,283 | 2,351 | 4,634 |
| 7.75% | PT - Fringe Total | 0 | 0 | 0 |
| Total Fringe | | 2,283 | 2,351 | 4,634 |
| Total S&W & Fringe | | 13,798 | 14,136 | 27,934 |
| | Supplies | 53,376 | 13,038 | 66,414 |
| | Undergrad Student Stipend: Air Quality Assistance | 2,800 | 2,800 | 5,600 |
| | Undergrad Student Stipend: On-site monitoring support | 1,400 | 1,400 | 2,800 |
| | Undergrad Student Stipend: Summer work | 3,500 | 3,500 | 7,000 |
| | Undergrad Student Stipend: GIS Assistance | 2,100 | 2,100 | 4,200 |
| | Travel: Conference | | 4,000 | 4,000 |
| | Other Costs | 0 | 0 | 0 |
| Total Direct Costs | | 76,974 | 40,974 | 117,948 |
| 54.00% | Indirect Costs (salary only) 54.0% | 6,218 | 6,364 | 12,582 |
| Total Project Costs | | 83,192 | 47,338 | 130,529 |

| Effective Period | Rate% | Applicable to: | |
|---|---|---|---|
| 6/1/2022 - 5/31/2023 | 54.0% | All programs | Federally negotiated rate |

**BUDGET JUSTIFICATION**
**SUBAWARD: VILLANOVA UNIVERSITY**

**PERSONNEL**

**Subaward Project Manager (1 summer month years 1 – 2):** Dr. Kabindra Shakya, Assistant Professor of Environmental Science, is the subaward project manager and responsible for the subaward portion of the proposed work. He will provide oversight on the project to install air pollution instruments, collect samples, and analyze the samples in lab. Shakya will mentor and train undergraduate students involved in the project, as well as, coordinate and have regular meetings with Overbrook Environmental Education Center to design the sampling, collect samples, and communicate the findings to the community. One month of summer salary per year for a total of two years is requested for Dr. Shakya. A 3% increase in salary is anticipated and budgeted in year 2.

**OTHER PERSONNEL**

**Graduate Student Assistant (years 1 – 2):** Funds will support one graduate student assistant to assist in creating a computer visualization tool to display air quality data in user friendly manner and communicate the findings of the community air monitoring to the public. The graduate student will be compensated $18 per hour for working 10 hours a week over the period of 14 weeks each year of the project ($18/hour X 10 hours/week X 14 weeks = **$2,520** each year).

**FRINGE BENEFITS**

At Villanova University, fringe benefits are charged individually as direct costs. These costs are budgeted as a percentage of an individual's salary based on his/her labor category. Current rates for applicable labor categories are 25.38% for full time faculty, no fringe benefits calculated on students.

**TRAVEL**

**Domestic Conference Travel ($4,000 year 2 only):** Funds are requested to support the Subaward Project Manager and 1 student to travel to a scientific convening (*UC Davis Air Sensors International Conference*) to present results from their findings. Travel costs are estimated at $2,000 per person x 2 persons = **$4,000** in year 2 of the project. Estimated costs are based on domestic airfare, hotel, per diem and conference registration.

**SUPPLIES & RESOURCES**

**Supplies, Materials and Resources ($53,376 year 1; $13,038 year 2):** Funds requested are to purchase the established sensors that are routinely used for measuring air quality in the community. There are several publications validating the use of these air pollution measurement methods.

**INSTRUMENTS (Total Costs: $40,338 year 1 only)**

**(22) Purple Air (#PurpleAir PA-II-SD, Purple Air, Inc.) $279.00 each**

**Year 1 only** **$6,138**

*15 Purple Air Monitors will be deployed at 15 outdoor sites across West Philadelphia. Additional 5 Purple Air Monitors will be co-located indoors at 5 sites. Two additional monitors are requested for replacements in case monitors got broken. Purple air measures* ***$PM_{2.5}$ and $PM_{10}$*** *in real time in two-minute intervals.*

**(160) Ogawa Passive Samplers (OGAWA & Company, USA, Inc.) $120 each**

**Year 1 only** **$19,200**

*One Ogawa Passive Sampler will monitor has two filters, each measuring two different gases. At each site, we will deploy two Ogawa Passive Sampler measuring* ***nitrogen oxides (NOx),*** *Nitrogen dioxide ($NO_2$), Sulfur dioxide ($SO_2$), and ozone ($O_3$). Duplicate measurements will be taken to measure the precision of the sampling method.*

15 sites (outdoor) × 4 samplers (2 duplicates) = 60 samplers

5 sites (indoor) × 4 samplers (2 duplicates) = 20 samplers

*Double number of passive samplers are requested so that when passive samplers are being used for monitoring gases, another set of passive samplers can be prepared in lab to swap for next week of sampling.*

**One (1) Air Pollution Sampler (BGI PQ100 FRM Sampler, Mesa Laboratories, Inc.)**
**Year 1 only** **$15,000**

This sampler will be used to collect $PM_{2.5}$ samples on filter substrate. Filter substrate will be digested with microwave acid digestion system and will be analyzed by Inductively Coupled Plasma Mass Spectrometry (ICP-MS) for twenty different elements including heavy metals such as **lead (Pb), Arsenic (As), Chromium (Cr), Nickel (Ni), Vanadium (V), and Cadmium (Cd).**

**SUPPLIES (Total Costs: $26,076; Requested $13,038 years 1 - 2 )**

Passive Sampling of trace gases ($2,832): These collection pads are used to measure the above gases.

| | |
|---|---|
| (6) Pre-coated collection pads (40/badge) for $NO_2$ ($118 each) | **$708** |
| (6) Pre-coated collection pads (40/badge) for Nox ($118 each) | **$708** |
| (6) Pre-coated collection pads (40/badge) for $O_2$ ($118 each) | **$708** |
| (6) Pre-coated collection pads (40/badge) for $SO_2$ ($118 each) | **$708** |

Ion Chromatograph (IC), microwave acid digestion system, and ICP-MS analysis and maintenance (including digestion vessels, suppressors). **$8,000**

Reagents (sulfanilamide, N-(1-Napthyl)-ehtylenediamine dihydrochloride, phosphoric acid, Sodium nitrite, multi-ion IC standard solution, IC eluent, nitric acid) **$5,000**

Lab supplies (Pipette tips, Pipette, syringes, gloves, beakers, vials, IC vials, centrifuge tubes) **$7,000**

*Reagents and lab supplies are used for passive sampling analysis including use of an ion chromatograph (IC), and lead analysis using ICP-MS.*

NIST Standard Reference Material (SRM 1648a) **$1,044**

Filter substrates (PTFE filter, Quartz fiber filters) **$1,200**

*NIST SRM and filter substrates are used for analyzing lead using ICP-MS.*

*Shipping charges ($500 per year) will be required for Ogawa Passive Samplers and other supply items purchased in years 1 – 2. **$1,000**

**OTHER DIRECT COSTS**

(4) Undergraduate Student Stipends:

One undergraduate student will assist in air quality measurement, sampler preparation, and data analysis. Responsibilities will include installation of purple air sensors, calibration, preparation, analysis of passive sampler, filter collection, and analysis of air quality assistance.

*Funds will support 1 student x $1,400/stipend per semester x 2 semesters each year =* ***$2,800 years 1 - 2.***

One undergraduate student will contribute to the intensive field campaign to support air quality measurement and analysis. Additionally, student will support for filter substrate collection for PM2.5, preparation of extract and analysis by ICP-MS. *Funds will support 1 student x $1,400/stipend for semester x 1 semester each year =* ***$1,400 years 1 - 2.***

One undergraduate student will work during summer to analyze and visualize air pollution data and coordinate with Overbrook Environmental Education Center to communicate findings to the community. *Funds will support 1 student x $3,500/stipend for 10 weeks of summer =* ***$3,500 years 1 - 2.***

One undergraduate student will focus on creating maps and analyzing data and create visualizations using Geographic Information System (GIS). *Funds will support 1 student x $2,100/stipend for work being done over 1.50 semesters each year =* ***$2,100 years 1 - 2.***

Undergraduate students will also be involved in preparation of manuscripts and presentations at local and national conferences (e.g., UC Davis Air Sensors International Conference and American Geophysical Union).

**INDIRECT COSTS**

Indirect costs are charged at Villanova's federally negotiated Indirect Cost Rate Agreement with the Department of Health and Human Services (DHHS) is 54% effective period 6/1/2022 - 5/31/2023 – until amended, on salaries and wages only.

## FACILITIES

**Laboratory:**
Dr. Shakya occupies a research laboratory (300 sq. ft.) within the Department of Geography and the Environment at Villanova University. Laboratory already has air pollution measurement instrument, reagents, and standards. The laboratory has a deionized water system. The departmental labs have several weighing machines, spectrophotometers, glassware, ovens, and deionized water system. The PI has access to Ion Chromatography instrument in the department.

**Office:**
Dr. Shakya has an office (Mendel Hall G67-I) down the hall from his research lab. The office is equipped with a laptop and an external monitor with Microsoft office applications and statistical software. Dr. Shakya has two additional desktop computers in his lab.

**Equipment:**
Department of Geography & the Environment: Dr. Shakya has access to inductively coupled plasma mass spectrometer (ICP-MS, Agilent 7900) and microwave acid digestion system (MARS6, CEM Corporation) housed at the Department of Geography & the Environment.

Shakya Lab: Shakya Lab several instruments to measure air and water pollution.

- One High Performance Liquid Chromatography (HPLC)
- One Sonicator
- Six Personal Aerosol monitors (pDR-1500 and Sidepak AM 520)
- One Grimm Aerosol monitor (Grimm Portable Laser Aerosol Spectrometer, Model 11-C)
- Three Black carbon monitors (Microaeth MA200, AE51)
- Ozone monitor and ozone calibration monitor (Model 202 and 306, 2B Technologies)
- NOx monitor (Model 405 nm, 2B Technologies)
- Particle counter (GT-526S model, Met One Instruments)
- Aerosol monitor (E-Sampler, Met One Instruments)
- Aerosol Sampler (Deployment Particulate Sampler, SKC Inc.)

**Kabindra Man Shakya**
Assistant Professor of Environmental Science
Department of Geography and the Environment, Villanova University
800 E Lancaster Avenue, Villanova, PA 19085

## Ex. 6 Personal Privacy (PP)

### (a) Professional Preparation

- Rice University, Houston, TX. Ph.D. (Environmental Engineering). 2011.
- Chiang Mai University, Thailand. M.S. (Environmental Science). 2004.
- Tribhuvan University, Nepal. M.S. (Botany). 2000.
- Tribhuvan University, Nepal. B.S. (Chemistry and Biology). 1998.

### (b) Appointments

| | |
|---|---|
| 2016-present | Assistant Professor of Environmental Science, Department of Geography and the Environment, Villanova University, Villanova, PA |
| 2012-2016 | Postdoctoral Research Associate, Department of Environmental Health Sciences, University of Massachusetts, Amherst, MA. |
| 2011-2012 | Postdoctoral Scholar, Scripps Institution of Oceanography, University of California, San Diego, CA. |
| 2011-2011 | Postdoctoral Scholar, Department of Civil and Environmental Engineering, Rice University, Houston, TX. |

### (c) Products

**Relevant Publications (5)**

1. **Shakya, K.M.**, Saad, A., Aharonian, A. (2020). Commuter exposure to particulate matter at underground subway stations in Philadelphia. Building and Environment, 186, 107322.
2. Conway, M., **Shakya, K.M.**, Kremer, P. (2020). Mapping social vulnerability to air pollution in Philadelphia, PA. Veritas: Villanova Research Journal, 2, 122-130.
3. **Shakya, K.M.**, Kremer, P., Henderson, K., McMahon, M., Peltier, P.E., Bromberg, S., Stewart, J. (2019). Mobile monitoring of air and noise pollution in Philadelphia neighborhoods during summer 2017. Environmental Pollution, 255(1), 113195.
4. **Shakya, K.M.**, Rupakheti, M., Shahi, A., Maskey, R., Pradhan, B., Panday, A., Puppala, S.P., Lawrence, Peltier, R.E. (2017). Near-road sampling of PM2.5 and BC, and fine-particle chemical components in Kathmandu Valley, Nepal. Atmospheric Chemistry and Physics, 17, 6503-6516.
5. **Shakya, K.M.**, Peltier, R.E., Shrestha, H., Byanju, R.M. (2017). Measurements of TSP, PM10, PM2.5, BC, and PM chemical composition from an urban residential location in Nepal. Atmospheric Pollution Research, 8(6), 1123-1131.

**Other significant Publications (5)**

1. **Shakya, K.M.**, Peltier, R.E., Zhang, Y., Pandey, B.D. (2019). Roadside exposure and inflammation biomarkers among a cohort of traffic police in Kathmandu, Nepal. International Journal of Environmental Research and Public Health, 16(3), 377.

# Stefanie A. Kroll, Ph.D.

Stream Ecologist, Research Team Leader, Assistant Research Professor

## EDUCATION

Ph.D. in Ecology, State University of New York, College of Environmental Science and Forestry (SUNY-ESF), Syracuse, New York. 2012

Master's equivalent, Ecology, Department of Agronomic Engineering, University of Castilla-La Mancha (UCLM), Albacete, Spain. 2008

B.S. in Environmental and Forest Biology, SUNY-ESF. 2001

## PROFESSIONAL EXPERIENCE

9/2017-present: **Head of Watershed Ecology Section, Senior Scientist,** Patrick Center for Environmental Research (PCER), Academy of Natural Sciences of Drexel Univ. (ANS)

Seek and secure funding and develop projects related to macroinvertebrates and algae as bioindicators, target-setting for freshwater restoration, resilience in agricultural streams, and novel uses of bioindicators. Research on headwater system function and climate change, DNA metabarcoding, eDNA, freshwater snails. Directly supervise three full-time and several temporary staff, who run a macroinvertebrate laboratory. Develop data outputs for technical and non-technical audiences, such as community scientists & watershed groups.

3/2013-present: **Project Science Director,** Delaware River Watershed Initiative, PCER.

Coordinate biomonitoring and research efforts for the large, collaborative Delaware River Watershed Initiative (DRWI) within ANS as well as in a consulting role for 30 conservation partners. As Project Science Lead, supervise 15 colleagues and staff on monitoring, communications, and outreach to community science programs and practitioners. Responsive to the data and information needs of on-the-ground conservation experts.

9/2016-present: **Assistant Research Professor, Adjunct Professor,** Department of Biodiversity, Earth and Environmental Sciences (BEES), Drexel University.

Developed new courses and adapted existing courses for Environmental Science majors and non-majors in small and large class sizes. Mentor undergraduate researchers, cooperative education students and high school interns.

5/2012-3/2013: **Postdoctoral Associate**, Entomology Department, Cornell University with Dr. Ann Hajek: Behavior and ecology of invasive *Sirex noctilio* and native Siricidae

Performed studies on *Sirex* and fungal symbionts, dissected insects, prepared and maintained fungal cultures, supervised undergraduates, analyzed data, and published two manuscripts.

4/2010-1/2011: **Field Biologist, Graduate Research Assistant,** Onondaga Lake Ecosystem Recovery Project, Dr. Neil Ringler, SUNY-ESF/Honeywell Corporation, Syracuse, NY.

Collaborated on studies of fish, macroinvertebrates and macrophytes in Onondaga Lake and its tributaries, performed field work and identified macroinvertebrates in gut contents of fish.

9/2007-12/2009: **Staff Scientist, Graduate Research Fellow**, Regional Center for Water Studies, University of Castilla-La Mancha.

Performed field work and data analysis for the regional water monitoring program.

1/2003-9/2011: **Interpreter, Translator, Editor** (Spanish-English), Spain and Syracuse, NY.

Translated technical documents, performed simultaneous and consecutive interpreting.

## TEACHING HISTORY (with course number & type)

| | |
|---|---|
| Drexel University | |
| A Watershed Approach (203, majors) | Fall 2018 |
| Environmental Science & Society (260, majors & non-majors) | 3 terms Summer 2017-19 |
| Introduction to Environmental Science (169, non-majors) | Spring 2018 |
| Aquatic Insects and Water Quality with Laboratory (380/580 undergraduate & graduate levels) | Fall 2014, Winter 2017 |
| Colgate University | |
| Organismal Biology: Insects (206, majors) | Spring 2012 |
| Onondaga Community College | |
| Introduction to Biology with Laboratory II (152, majors) | Spring 2012 |
| Introduction to Biology with Laboratory I (151, majors) | Fall 2011, Summer 2011 |
| Exploring Biology with Laboratory (121, non-majors) | Summer 2011 |
| General Ecology (131, majors & non-majors) | Fall 2010, 2011 |

## PEER REVIEWED PUBLICATIONS

Kroll, S.A., U. Malvadkar, M. Campagna, in revision. Land use differentially predicts macroinvertebrate index scores in the Delaware Basin. Short communication, *Ecological Indicators*, to be resubmitted February, 2022.

Kroll, S.A., H.C. Oakland, A.M. Frohn, 2021. Macroinvertebrate and diatom indicators of ecosystem integrity for setting targets in agricultural BMP restoration. *Ecosphere*, doi:10.1002/ecs2.3798.

Kroll, S.A., H.C. Oakland, 2019. Review of studies documenting the effects of agricultural best management practices on stream ecosystem integrity. *Natural Areas Journal* 39(1): 58-77.

Kroll, S.A., R.J. Horwitz, D.H. Keller, B.W. Sweeney, J.K. Jackson, L.B. Perez, 2019. Large-scale protection and restoration programs aimed at protecting stream ecosystem integrity: The role of science-based goal-setting, monitoring, and data management. *Journal of Freshwater Science* 38(1): 23-39.

Kroll, S.A., N.H. Ringler, J. De las Heras, 2017. Macroinvertebrates on the front lines: projected community response to temperature and precipitation changes in Mediterranean streams. *Journal of Freshwater Ecology* 32(1): 513-528.

Hajek, A.E., P. Tobin, S.A. Kroll, S.J. Long, 2017. Symbionts mediate oviposition behavior in invasive and native woodwasps. *Agricultural and Forest Entomology*. 20(3): 442-450.

Kroll, S.A., E.E. Morris, S.J. Long, A.E. Hajek, 2013. Parasitism of *Sirex noctilio* by non-sterilizing *Deladenus siricidicola* in NE North America. *Biological Control* 67: 203-211.

Kroll, S.A., N.H. Ringler, J. De las Heras, J.J. Gómez-Alday, A. Moratalla, R.D. Briggs, 2012. Changes in stream water quality and macroinvertebrate communities in response to flow regulation and inter-basin transfer: The Segura River Basin (SE Spain), *Ecohydrology* 6(5): 878-888.

Kroll, S.A., C. Navarro, M.C. Cano, J. De las Heras, 2009. The influence of land use on stream water quality and macroinvertebrate biotic indices in rivers within Castilla-La Mancha (Spain). *Limnetica* 28(2): 203-214.

## MANUSCRIPTS IN PREPARATION

Oakland, H.C., S.A. Kroll, T.H. Dapkey, M. Hurley, M. Baker, JK Jackson, M. Bross. Threshold analysis to project community recovery from agricultural restoration.

Dilworth, R., S.A. Kroll, M.J. Kurz, editors. Shared Governance of the Delaware River Basin. Book proposal to Temple University Press, February, 2022. Target completion: 2023.

Kroll, S.A., M.J. Kurz, L.B. Perez, D.H. Keller, R.J. Horwitz, J.K. Jackson. Science for decision-making in the Delaware Basin. Book chapter within Dilworth et al. (above).

Oakland, H.C., S.A. Kroll, A. Chan, D.H. Keller. Multiple indicators of in-stream and bank restoration success.

Kroll, S.A., D.H. Keller. The influence of adventitious tributaries on the ecological integrity of receiving streams.

T.H. Dapkey, Kroll, S.A., H.C. Oakland, M.J. Kurz, M. Bross, D.H. Keller. Use of ecological traits in projecting vulnerability and potential for recovery of aquatic ecosystems after restoration.

## RESEARCH FUNDING

$20,000, "Assessment of progress & actions needed to reduce lead poisoning in West Philadelphia." Glenmede Foundation, Drexel Environmental Collaboratory inaugural grant, June 2022-June 2023. (**co-PI with Jerome Shabazz**, Overbrook Environmental Education Center)

$220,000, "Conservation Blueprint for the Delaware River Basin." U.S. Fish & Wildlife Service. Compilation of data and research to develop a comprehensive plan for conservation needs in the Delaware. (PI-Lin Perez, **I am a researcher**)

$2.1 million, "Science lead to support conservation through the Delaware River Watershed Initiative (DRWI)." William Penn Foundation, February 2022- February 2024. Supports monitoring, research, consulting with collaborating NGOs on monitoring plans and data use for outreach, focusing on the effects of agricultural Best Management Practices on aquatic ecosystems (**co-PI with Lin Perez**)

$125,000, "Freshwater snails in the Upper Delaware Wild and Scenic Area," National Park Service. March 2022-August 2023. (**PI**)

$162,000, "Biodiversity of Pennsylvania Headwaters for Assessing Conservation," Pennsylvania Department of Environmental Protection, Growing Greener Program. March 2021-December 2023. (**PI, collaborating with Steven Rier**)

$327,000, "Evaluating Headwater Biodiversity, Vulnerability, and Potential Resilience to Inform Conservation in the Delaware Basin." National Fish & Wildlife Foundation, U.S. Fish and Wildlife Service, Delaware Watershed Conservation Fund. November 2020-November 2022. (**PI, collaborating with Steven Rier**)

$280,000, "Project Impact Assessment for DRWI projects in agricultural areas and their effects on aquatic ecosystems." National Fish and Wildlife Foundation for September 2020- September 2021. Supports sampling and data analysis.(**co-PI with Marie Kurz**)

$350,000, "Land Protection Impact Assessment." Open Space Institute, October 2019-August 2022. Supports analysis of aquatic integrity relative to forested land cover in the Delaware basin for prioritizing land preservation. In collaboration with Stroud Water Research Center (J. Jackson) (**co-PI with Marie Kurz, David Keller**).

$77,000 "Cobbs Creek Stormwater Control through Residential Actions." Subcontract with Darby Creek Valley Association's $250,000 grant from PA DEP's Growing Greener

Program. October 2019-June 2021. Supports scientific material for outreach products to residents and community scientists, sampling and data analysis (**Co-PI with DCVA**).

$1.05 million "Science lead to support conservation through the Delaware River Watershed Initiative (DRWI)." William Penn Foundation, February 2021- February 2022. (**co-PI with Lin Perez**)

$2.7 million for the Delaware River Watershed Initiative (as above). William Penn Foundation, February 2018- February 2021 (**co-PI with Roland Wall**).

$40,000, "Pilot study for using DNA metabarcoding of macroinvertebrates in bioindicator research." Academy of Natural Science's research endowment, June 2020-June 2022. Supports analyses of DNA metabarcoding of macroinvertebrate communities in headwater streams and potential use as bioindicators (**PI**).

$1.3 million grant from the William Penn Foundation for the DRWI (as above), February 2017- February 2018 (**co-PI with Roland Wall**).

$159,886 grant from Pennsylvania Department of Environmental Protection's Growing Greener Program, July 2015 – December, 2018. Supports monitoring past restoration projects for evaluation of their success (**PI**).

$2.89 million "Science lead to support conservation in the DRWI." William Penn Foundation, February 2014- February 2017 (**co-PI with Roland Wall**).

$11,000 "Macroinvertebrate communities of lentic habitats in the DRWI." Academy of Natural Science's research endowment, July 2017-July 2018 (**PI**).

$15,000 "Identification of macroinvertebrate samples and data analyses for study on TMDL in Wissahickon Creek." Temple University, September, 2017-December, 2018. (**PI**).

$150,000 "Study on stream integrity around a small dam on Wissahickon Creek." Erdenheim Farm, September, 2017- March, 2019. (**Head of Macroinvertebrate portion; William Ryan, PI**).

$45,000, 3-year research scholarship from the University of Castilla-La Mancha, funded by the Autonomous Community of Castilla-La Mancha for routine biomonitoring studies on regional streams. Fall, 2007-January, 2010. (**Graduate student**)

## TECHNICAL REPORTS/ OTHER PUBLICATIONS

DiverSeTEM blog series. December, 2020-present. Medium.com Co-developer of collaborative network of environmental practitioners writing 6 articles about Diversity, Equity and Inclusion in STEM fields. Collaboration with Amberly Choi, Lara Heacock, Tykee James, Wenny Lin, Lauren McGrath, Jen Orr-Greene, Nancy Popkin.

Dapkey, T.H., S.A. Kroll, M.J. Kurz, L.B. Perez, M. Campagna, M. Hurley, K. Christopher. 2019-2020. Multiple data products for the DRWI partners: Non-technical descriptions of indicators and presentation of data.

Kroll, S.A. March 30, 2020. Work from home tips from our scientist. ANS, https://www.anspblog.org/wfh-tips-from-our-scientist/

Kroll, S.A. January 2, 2019. Where have all the insects gone? Article review, ANS, www.anspblog.org/where-have-all-the-insects-gone.

Perez, L.B., Christopher, K.A., Kroll, S.A., December, 2018. Impact of Phase 1 actions in the DRWI. *Report to the William Penn Foundation.*

Christopher, K.A., M.J. Kurz, S.A. Kroll, 2017. Data summaries for the DRWI for all sites sampled 2013-2016. *Report to the William Penn Foundation.*

Christopher, K.A., S.A. Kroll, G.J. Barren, 2016. Two-page summaries of DRWI cluster stream conditions using multiple indicators. *Report.* http://ansp.org/drwi

Kroll, S.A., R. Abell, 2015. Points of Departure: Baseline Conditions in the Subwatershed Clusters of the Delaware River Watershed Initiative, Academy of Natural Sciences of Drexel University, 65 pp. http://www.ansp.org/~/media/Files/ans/research/pcer-other/Points%20of%20Departure.ashx?la=en.

Kroll, S.A., L. Perez, 2014. Delaware River Watershed Initiative: Cluster Characterization Report, ANS, 34 pp. http://www.ansp.org/research/environmental-research/projects/watershed-protection-program/.

Kroll, S.A., L. Perez, K. Christopher, 2014. Coordinated Monitoring Plan for the Delaware River Watershed Initiative, ANS, 50pp. http://www.ansp.org/~/media/Files/ans/research/pcerother/Monitoringplan150728compressed.ashx?la=en.

Navarro-Llacer, C., S. Kroll, J. de las Heras, 2009. Ecological status of rivers of Castilla-La Mancha: Relationships with land use, flow regulation and ecological flow criteria. University of Castilla-La Mancha, Regional Center for Water Studies, Submitted to the Castilla-La Mancha Ministry of the Environment.

Kroll, S.A. May 13, 2020. Coping with anxiety and worry during COVID. Medium.com

## RELATED SKILLS AND ACTIVITIES

- Knowledge of aquatic macroinvertebrate taxonomy (genus level) in Spain and NE USA.
- Experience performing and assigning various algae, fish and macroinvertebrate sampling techniques.
- Development of monitoring plans for measuring the effects of conservation actions for use by professional scientists, non-profit organizations and watershed associations.
- Consulting with community monitoring groups to tailor monitoring plans and data communication for outreach.
- Publishing data in user-friendly forms for outreach to decision-makers and constituents.
- Experience with 'R', SPSS, CANOCO and e-Primer statistical software packages.
- Experience with QGIS and ArcGIS software packages.
- Environmental Leadership program Fellow (2020)
- Completion of Supervisory Certificate Program (Drexel University; 2016).
- Completion of Drexel Leaders 20/20 Program (2018).
- Fluent in Spanish, intermediate level in French.
- Certified medical interpreter for Spanish (MAMI Certification, Syracuse, NY)
- Preparation of tissue samples for Stable Isotope Analysis.
- Experience with PCR, DNA isolation, sterile technique.

## PROFESSIONAL ACTIVITIES AND OTHER INTERESTS

- All You Can Save Book Circle facilitator, summer, 2021.
- Advisory Board Co-chair, Tookany-Tacony-Frankford Watershed Partnership, 2016-present, Diversity Committee (2018-20).
- Diversity committee, Academy of Natural Sciences, 2019-present.
- Diversity talk planning committee, Office of Research and Innovation, Drexel University.
- Monitoring Advisory Committee, Raritan Headwaters Association (RHA), 2014-2020; Volunteer, annual stream monitoring, 2014-2017.
- Community-Based Global Learning professional learning community (Drexel University).
- Volunteer, Mentor, Women in Natural Sciences Program (engaging young women from underrepresented minorities in an out-of-school science program during high school), Academy of Natural Sciences.

- Volunteer, Big Brothers, Big Sisters Independence Region, 2014-2016; 2018-2020.
- Mentor, Drexel Liberty Scholars Program (volunteering to mentor a student with full, need-based scholarship), 2018-2019.
- Peer reviewer: PLOS ONE, Canadian Journal of Zoology, Northeastern Naturalist, Restoration Ecology, Diversity.
- Professional Memberships:
    - Society of Freshwater Science (SFS) National and Mid-Atlantic Chapters
    - 500 Women Scientists, Philadelphia Pod
    - American Association for the Advancement of Science
    - American Water Resources Association
    - Society for Ecological Restoration
    - Society of Women Environmental Professionals of Philadelphia.
- Active hobbies (snowshoeing, hiking, yoga), poetry and songwriting, playing the ukulele, singing. Certified yoga teacher (200 hour training).

## AWARDS

DRWI project receives Integrated Water Resource Management Award from the American Water Resources Association, 2018.

Excellence in Project Management, Academy of Natural Sciences, 2014.

Excellence in Advising Undergraduate Research, SUNY-ESF, 2012.

Graduate research fellowship award, University of Castilla-La Mancha, 2008-2010.

## PARTICIPATION IN CONFERENCES (students in **bold**)

September 2020. Forum of the Coalition for the Delaware River Watershed, Online
*Presentation:* Research in the Delaware River Basin Lightning Talk: ANS research on indicators of recovery in the DRWI. (SA Kroll, ML Kurz, DH Keller, M Hurley)

May 2019: Society of Freshwater Science, Salt lake City, Utah. Moderator
*Presentation:* Past restoration: Success or failure? And what are the criteria? (SA Kroll, **HC Oakland**, **A Chan**, DH Keller, L Aycock)

May 2019: Week of Undergraduate Excellence, Drexel University
*Poster:* River restoration—Assessing "Successful" Indicators. (**L Chamberlain**, SA Kroll, **A Chan**, **HC Oakland**, MJ O'Donnell)

January 2019: Partnership for the Delaware Estuary Science Summit, Cape May, NJ.
*Poster:* Coordinated conservation through the DRWI-- how much improvement do we predict? (SA Kroll, **HC Oakland**, MJ O'Donnell, JK Jackson, J Battle)

November 2018: Delaware Watershed Research Conference, Philadelphia, PA. Moderator.

November 2018: American Water Resources Association, Baltimore, MD.
*Presentation:* Connecting Baseline conditions to potential recovery of biotic communities due to restoration through the Delaware River Watershed Initiative (SA Kroll, DH Keller, RJ Horwitz, JK Jackson)

October 2018: Academy Research Day, Academy of Natural Sciences, Philadelphia, PA.
*Presentation:* Better farming, better streams?

September 2018: Delaware River Watershed Forum, Coalition for the Delaware River Watershed, Cape May, NJ.

July 2018: University Council on Water Resources, Pittsburgh, PA.

*Presentation:* Monitoring and data management to support conservation in the Delaware River Watershed Initiative. (SA Kroll, DH Keller, RJ Horwitz, JK Jackson, SM Haag)

June 2018: Society of Freshwater Science, Detroit, MI.
*Presentation:* Structure and function of macroinvertebrate communities for setting targets for agricultural BMP restoration. (SA Kroll, HC Oakland, **MJ O'Donnell**, JK Jackson)

May 2018: Week of Undergraduate Excellence, Drexel University
*Poster:* Past restoration: Success or failure? **(A Pilla, A Chan, MJ O'Donnell**, SA Kroll, **HC Oakland**)

May 2018: River Rally, Lake Tahoe, CA.
*Presentation:* Better farming, Better Streams?

June 2017: Society of Freshwater Science, Raleigh, NC.
*Presentation:* Connecting baseline conditions to potential recovery of macroinvertebrate and diatom communities due to restoration through the DRWI. (SA Kroll, **MJ O'Donnell**, AD Minerovic, JK Jackson)

May 2016: Society of Freshwater Science, Sacramento, CA.
*Presentation:* Planning and assessing restoration using multiple indicator monitoring and integrated data management in the Delaware River Basin. (SA Kroll, SM Haag, DH Keller, RJ Horwitz, JK Jackson)

April 2016: National Conference on Ecological Restoration, Coral Springs, FL.
*Presentation:* Monitoring and data management to inform conservation in the DRWI. (SA Kroll, DH Keller, RJ Horwitz, JK Jackson, SM Haag)

May 2015: Society of Freshwater Science, Milwaukee, WI.
*Presentation:* Multiple indicator analysis of streams throughout the Delaware River Watershed (SA Kroll, RJ Horwitz, DH Keller, **AD Minerovic**, JK Jackson).

January 2015: Partnership for the Delaware Estuary Summit, Cape May, NJ.
*Presentation:* Macroinvertebrate communities in the eight subwatershed clusters of the Delaware River Watershed Initiative (SA Kroll, JK Jackson).

October 2014: 2nd Annual Delaware River Watershed Forum, Bethlehem, PA.
*Presentation:* Coordinated monitoring for the DRWI. (SA Kroll, RJ Horwitz).

November 2014: American Water Resources Association, 50th Anniversary Conference, Vienna, VA.
*Presentation:* Monitoring to inform modelling for the DRWI. (SA Kroll, RJ Horwitz)
*Moderator:* Watershed Protection Modeling I.

May 2014: Joint Aquatic Sciences Meeting, Portland, OR.
*Presentation:* Coordinated restoration and conservation actions and monitoring the Delaware Watershed Conservation Program. (SA Kroll, RJ Horwitz, R Wall).
*Poster:* Predicted effects of climate change on aquatic insect communities in the short-term in Castilla-La Mancha, Spain. (SA Kroll, NH Ringler).

February 2014: Research Day (student posters), Drexel University, Philadelphia, PA
*Poster:* The effects of land use on water quality and benthic macroinvertebrate indices of biological integrity, a historical study of the Delaware River Basin (**D Luong**, SA Kroll, *et al.*).

August 2013: Society for Invertebrate Pathology, Pittsburgh, PA.
*Presentation:* Parasitism of *Sirex noctilio* by non-sterilizing *Deladenus siricidicola* in northeastern North America. (SA Kroll, **EE Morris**, S Long, AE Hajek).

January 2013: USDA Interagency Research Forum on Invasive Species, Annapolis, MD.

*Poster:* Parasitism of *Sirex noctilio* by non-sterilizing *Deladenus siricidicola* in northeastern North America. (SA Kroll, **EE Morris**, S Long, AE Hajek).

April 2011: North American Benthological Society (NABS) meeting, Providence, RI.
*Presentation:* The impact of hydroelectric dams on the macroinvertebrate community in two climates: Salmon River, USA and Segura River, Spain. (SA Kroll, NH Ringler, J de las Heras).

June 2010: NABS/Association for the Sciences of Limnology and Oceanography (ASLO) Joint Meeting, Santa Fe, NM.
*Presentation:* Changes in the macroinvertebrate community as a result of flow regulation and inter-basin transfer on the in the Segura River Basin, Spain. (SA Kroll, NH Ringler, J de las Heras).

September 2008: XIV Congress of the Iberian Limnological Association, Huelva, Spain.
*Presentation & Poster:* The influence of land use on stream water quality and macroinvertebrate biotic indices in rivers within Castilla-La Mancha. (SA Kroll, C Navarro-Llacer, J de las Heras).
*Poster:* Biological and hydromorphological effects of river regulation downstream three reservoirs of South Spain. (D Baeza, C Navarro-Llacer, SA Kroll, J de las Heras).

## OTHER RECENT PRESENTATIONS

August & September 22, 2021. Panelist, Birds and Brews, Audubon Mid-Atlantic.

April 21, 2021. Defining and protecting headwater resilience, NOAA Earth to Sky series in the Delaware Basin.

October 22, 2020. Setting targets for watershed health in the DRWI and related research on the projected effects of on-the-ground actions. Virtual Delaware Watershed Research Conference.

August 21, 2020. Panelist and contributor: "Diversity Dialogue: Allyship: Something You Do, Not Something You Are." Webinar with Drexel University's Office of Research and Innovation and ANS's Black and Brown Caucus.

August 5, 2020. "Data and communication data products in the DRWI." Webinar with River Network, Stroud Water Research Center.

June 20, 2020. "Study on stream restoration through PA DEP's Growing Greener and other programs." Webinar with **Hayley Oakland** and **Amanda Chan**.

June, 2020 "Tools for data collection and sharing in the DRWI" Webinar with River Network

November 1, 2019. "Macroinvertebrates tell all: Bioindicators of environmental conditions" Biology and Allied Health Sciences Departmental Seminar Series, Bloomsburg University.

September 24, 2019. Panelist for Philadelphia Environmental Film festival screening: Anthropocene: The Human Epoch, ANS.

June 6, 2019. Engaging the Environment, Drexel University.

May 5, 2019. Raft debate, Drexel University (2nd place).

January 8, 2019. Panel member, Academy Conversation: What happens if federal regulations protecting clean water are scaled back? Academy of Natural Sciences of Drexel University.

October 25, 2018. Guest lecture for Introduction to Environmental Studies, Drexel University.

September, 2018. Dean's Seminar, Drexel University.

August 22, 2018. Drexel InSites, panel discussion on urban ecology, Academy of Natural Sciences of Drexel University.

Summer, 2017. Farmer's breakfast, Honey Brook, PA. Water quality in your region.

# Jerome Shabazz

6134 Lancaster Avenue - Philadelphia, Pennsylvania

## Professional Preparation

- St Joseph's University, Masters-of-Science Degree in Environmental Protection
- Eastern University, Bachelors-of-Arts Degree in Organization Management
- St Joseph's University, Environmental Protection & Safety Management, Certificate
- Environmental Protection Agency (EPA) – Certified Lead Safety RRP Trainer
- Homeland Security - Chemical/Terrorism Vulnerability Information Certificate
- Langevin Learning Systems - Certified Professional Trainer, Certificate
- Dale Carnegie- Professional Group Facilitator, Certificate
- K.W. Turnnel – Professional Group Facilitator, Certificate
- International Trauma Center (ITC) Basic Psychological First Aide & Post Traumatic Stress Management Certificate
- ServSafe Certification
- Federation Aviation Administration – Remote Polit Certification

## Appointments

- 2002 – Present Executive Director, Overbrook Environmental Education Center
- 2010 – Present Adjunct Professor, Community College of Philadelphia
- 2010 – 2019 Faculty, Penn State University
- 2005 – 2010 Manager of Safety & Training, Philadelphia Gas Works
- 1995 – 2005 Training Officer, Philadelphia Water Department
- 1989 – 1995 Engineering Technician, Philadelphia Water Department
- 1985 – 1989 Water & Wastewater Treatment Operator, Phila. Water Department
- 1983 – 1985 Surveyor/Engineering Technician, D.S Winokur & Associates
- 1979 – 1983 Draftsman/Engineering Technician, Omni Engineering

## Board Membership

- National Environmental Justice Advisory Council (NEJAC)
- PA Department of Environmental Protection – Environmental Justice Advisory Board (EJAB)
- PA Department of Environmental Protection – Citizen Advisory Council (CAC)
- City of Philadelphia – Environmental Justice Advisory Commission (EJAC)
- University of Pennsylvania - Center of Excellence in Environmental Toxicology Advisory
- Keep Pennsylvania Beautiful – Board of Directors
- Community Design Collaborative
- Franklin Institute – Climate & Urban Systems Partnership
- School District of Philadelphia – Career Technical Education Advisory
- US Forest Service – Sustainable Operations in Schools Partner

# SANDRA RIGBERG

Ex. 6 Personal Privacy (PP)

## EDUCATION

**University of Pennsylvania,** Philadelphia, PA
Candidate for Bachelor of Arts | *Expected Graduation:* May, 2022
*Major:* Environmental Studies | *Minor:* Law and Society | *Cumulative GPA:* 3.90 / 4.00

**Santa Monica High School,** Santa Monica, CA
Graduated with Honors, Valedictorian Candidate | Cumulative GPA: 4.00 / 4.00
President, *Team Marine* | Founder, *Building Homies*| Conducted school-wide trash audit, including research and polls

## PROFESSIONAL EXPERIENCE

**Kevala** — *San Francisco, CA*
***Business Research Analyst Intern*** — *June 2021—August 2021*

- Gathered and analyzed data on levelized cost of power, solar capacity, grid storage, and other energy metrics in all 50 U.S. states; analyzed emerging trends and growth opportunities within the energy industry
- Researched and reviewed Requests for Proposals from 250 prospective clients, including investor-owned utility companies, solar developers, and electric vehicle infrastructure developers
- Edited standard operating procedure documents for sales and marketing team

**All You Need is Love Events** — *Ojai, CA*
***Assistant Event Planner*** — *July 2019, July 2021*

- Assisted in the planning and execution of multiple weddings; coordinated and oversaw all vendor transactions; delegated logistical tasks to planning committee

**Helen Gym, Philadelphia Councilmember** — *Philadelphia, PA*
***Research Assistant*** — *June 2020—August 2020*

- Conducted comparative policy analysis of labor rights and regulations in top 30 U.S. cities; presented key findings to staff; participated in town halls and communicated relevant issues and feedback from constituents to staff
- Performed due diligence on potential staff hires

**Cami and Jax** — *Santa Monica, CA*
***Salesperson*** — *June 2019—August 2019*

- Collaborated on social media communications strategy; oversaw inventory and buying decisions; managed sales transactions and client relationships

## EXTRACURRICULARS & OTHER EXPERIENCE

**OAX Philanthropic Society** — *Philadelphia, PA*
***Head of Communications*** — *August 2019—Present*

- Manages all public relations and marketing for organization; designed and distributed apparel
- Spearheaded multiple charity and education initiatives

**The Netter Center** — *Philadelphia, PA*
***Environmental Equity Fellowship*** — *January 2020—May 2021*

- Created four unique environmental education curricula for elementary, middle, and high school students
- Participated in multiple Professional Development Workshops on environmental justice, diversity and leadership

**PowerCorps PHL** — *Philadelphia, PA*
***Project Volunteer*** — *September 2020—December 2020*

- Collaborated with a team to interview PowerCorps alumni and current members; delivered analysis, summary, and presentation for Power Corps' diversity initiatives

**SKILLS & STRENGTHS:** Proficient in Microsoft Office (MS Word, Excel, PowerPoint, Outlook), Google Suite, Slack, Notion Project Management Software, ArcGIS, R, Java, social media channels; strong written and verbal communication, research and analysis, solution-oriented mindset, collaboration

**INTERESTS:** backpacking, solving the New York Times Daily Mini Crossword, piano, all things Harry Potter

Jada Ackley

# Ex. 6 Personal Privacy (PP)

## Education

**BACHELOR OF ARTS | EXPECTED GRADUATION DECEMBER 2021 | TEMPLE UNIVERSITY-COLLEGE OF LIBERAL ARTS**

- **Major:** Environmental Studies **Minor:** City and Regional Planning
- **Related coursework:** Urban Dynamics, Environment and Society, Environmental Planning, Environmental Policy Issues, Transportation Planning, Economic Decisions and Public Policy, Sustainable Cities, City Planning Principals and Practice, Land Use Planning, Community Engagement and Empowerment

## Professional Experience

**PPROJECT COORDINATOR | OVERBROOK ENVIRONMENTAL EDUCATION CENTER JASTECH DEVELOPMENT SERVICES, INC | JANUARY 2022 – CURRENT**

- Program coordinator for the Philly Green Ambassador Program
- Maintaining records of all project meetings and activities
- Serve as liaison between partner sites and OEEC
- Provide administrative support for curriculum development
- Conduct site visits
- Track progress and prepare reports as needed

**LOCAL CLIMATE ACTION PLAN INTERN | PA DEPARTMENT OF ENVIRONMENTAL PROTECTION WITH ICLEI | AUGUST 2020-JUNE 2021**

- Led Haverford Township in the creation of an updated Climate Action Plan (CAP).
- Coordinated with Township leaders and municipal entities to determine Greenhouse gas reduction goals and actions.
- Created data-based, community informed actions for various emissions sectors.
- Engaged community members through virtual workshops and outreach to develop CAP.

**EDITORIAL INTERN | GREEN PHILLY | MAY 2020- AUGUST 2020**

- Created sustainability focused content specific to the Philadelphia region.
- Facilitated a discussion panel for a Green Philly sustainability symposium with environmentalist organizations in Philadelphia regarding the intersection of community development, urban agriculture and environmentalism.
-

## Advocacy Experience

**ECO-LEAD | TEMPLE UNIVERSITY | JANUARY 2021**

- Temple sustainability office peer leadership program
- Responsible for attending workshops and service events to disseminate findings and information with the greater Temple community.
- Walk-audit Certified

VILLANOVA
UNIVERSITY
College of Liberal Arts
and Sciences

DEPARTMENT OF GEOGRAPHY AND THE ENVIRONMENT
COLLEGE OF LIBERAL ARTS AND SCIENCES

March 23, 2022

U.S. Environmental Protection Agency
Grant Reviewers for Enhanced Air Quality Monitoring for Communities

RE: Commitment letter for project titled 'Overbrook Breath Right Community Air Monitoring Project'

I am excited to partner with Overbrook Environmental Educational Center to monitor air quality in environmental justice communities in West Philadelphia. I am committed to provide support for the Overbrook Center's proposal titled 'Overbrook Breath Right Community Air Monitoring'.

I have over 15 years of experience in the field of air quality monitoring. My expertise is in air quality and environmental health. Specifically, I have measured particulate matter and its chemical characterization, and trace gases in ambient air. I have published 28 peer-reviewed manuscripts in scientific journals; 14 of them were first-authored articles. Since joining Villanova University as an assistant professor of environmental science in 2016, I have received about USD$1.35 million research support from federal and non-federal agencies including the National Science Foundation, National Institutes of Health, Pennsylvania Department of Environmental Protection, and Villanova University.

I am committed to work with Overbrook Center for the successful completion of this project. As committed as a sub-contract of the project, my research group will be responsible for monitoring air quality, for quality assurance and quality control. My group will also download data and do laboratory analysis for the measurement of gases and metals. Several students at Villanova University are supported from the project, who will be actively involved in air quality data collection, instrument preparation, calibration, data analysis and data visualization.

If you need additional information, please do not hesitate to contact me.

Thank you.

Yours Sincerely,

Kabindra M. Shakya, Ph.D.
Assistant Professor and Environmental Science Program Director

800 E Lancaster Ave, Mendel G-67 Villanova, PA 19085 | Ph: 610-519-3590 | Email:babindra.shakya@villanova.edu

The Academy of Natural Sciences of DREXEL UNIVERSITY

Mr. Jerome Shabazz
JASTECH/ Overbrook Environmental Education Center
6134 Lancaster Avenue
Philadelphia, Pennsylvania 19151

March 25, 2022

Dear Mr. Shabazz,

The Academy of Natural Sciences is very excited to partner with JASTECH/ The Overbook Environmental Education Center and community partners on the EPA's Enhanced Air Quality Monitoring for Communities Grant Proposal "Overbrook Breathe Right Community Air Monitoring Project." As a partner, we commit to working on the air pollution monitoring and education components, lead exposure risks and safety, collaboration with you and the other community partners in developing educational material development and workshops.

The partnership among The Academy of Natural Sciences, Overbook Environmental Education Center, and Villanova University brings together experts from multiple disciplines to address the continuing issue of air pollution and its effects on community health in West Philadelphia. As such, our project directly advances The Environmental Collaboratory's objectives to contribute novel solutions to real-world problems through multidisciplinary research and collaboration with communities. The project also aligns with the Academy's goals to support natural systems, take action on environmental justice, and incorporate inclusion, diversity and leadership on topics as important as lead contamination in our communities.

We look forward to developing this project with you and the community.

Sincerely,

Stefanie Kroll, Ph.D.
Assistant Research Professor, Watershed Ecology Section Lead
Academy of Natural Sciences of Drexel University
Department of Biodiversity, Earth and Environmental Sciences

INTERNAL REVENUE SERVICE
P. O. BOX 2508
CINCINNATI, OH 45201

DEPARTMENT OF THE TREASURY

Date: MAY 22 2007

Employer Identification Number:
23-2943764
DLN:
17053090823017
Contact Person:
STEVE D DUVALL ID# 31535
Contact Telephone Number:
(877) 829-5500
Public Charity Status:
170(b)(1)(A)(vi)

JASTECH DEVELOPMENT SERVICES INC
6401 DREXEL RD
PHILADELPHIA, PA 19151

Dear Applicant:

Our letter dated OCTOBER 2002, stated you would be exempt from Federal income tax under section 501(c)(3) of the Internal Revenue Code, and you would be treated as a public charity, rather than as a private foundation, during an advance ruling period.

Based on the information you submitted, you are classified as a public charity under the Code section listed in the heading of this letter. Since your exempt status was not under consideration, you continue to be classified as an organization exempt from Federal income tax under section 501(c)(3) of the Code.

Publication 557, Tax-Exempt Status for Your Organization, provides detailed information about your rights and responsibilities as an exempt organization. You may request a copy by calling the toll-free number for forms, (800) 829-3676. Information is also available on our Internet Web Site at www.irs.gov.

If you have general questions about exempt organizations, please call our toll-free number shown in the heading.

Please keep this letter in your permanent records.

Sincerely yours,

Robert Choi
Director, Exempt Organizations
Rulings and Agreements

Letter 1050 (DO/CG)

Appendix

# Breathe Right Community Air Monitoring

## Logic Model

| Resources / Input | Activities | Outputs | Audience | Short-term Outcomes (6-12 months) | Intermediate Outcomes (12-24 months) | Long-term Outcomes (2 + years) |
|---|---|---|---|---|---|---|
| • Staff time<br>• In-kind Contributions<br>• Additional Grants<br>• Volunteers<br>• Partnering Organizations:<br>- Academy of Natural Sciences of Drexel University<br>- Villanova University<br>- Neighbors of 62nd Street<br>- Lebanon Avenue Block Association<br>• EJ Screen | • Form Community Advisory Board<br>• Conduct focus groups on Healthy Homes & Neighborhoods<br>• Hold Advisory Board Meetings to determine target audience and target behaviors for Healthy Homes & Neighborhoods Campaign and Project.<br>• Partner meetings to discuss how to formulate an interagency air quality guidance model<br>• Community involved in air quality monitoring<br>• Provide educational | • Formative Planning Process Developed<br>• Complete 4-6 focus groups around the Clean Air Act<br>• One to two meetings with community Advisory Board around Toxic Substance Control & Solid Waste Disposal Acts.<br>• Fifteen neighborhood members will engage in Pocket Lab Air Monitoring<br>• Fifteen neighborhood | • City, state government<br>• Local partners<br>• Community residents<br>• University partners<br>• Career technical Education students<br>• College Interns<br>• EJ Community<br>• Local and regional environmental non-profit organizations | • Increase number of residents who are aware of localized air quality impacts<br>• Increase the number of residents who connect air quality to respiratory duress<br>• Increase the number of residences that are aware of air quality issues in the West Philadelphia Community<br>• Increase number of residents who participate in research efforts that coproduce methodologies and data acquisition in the | • Increase environmental literacy amongst residence by 10-20%<br>• Increase the number of stakeholders participating in the 'Breathe Right' project by 10%<br>• Increase the number of residences who are aware of local air quality best practices<br>• Increase in number of residents that know about the impacts of climate change on the | • Decrease interior and exterior air pollution in the Overbrook Community<br>• Develop a permanent neighborhood-based Citizen Science Environmental Learning lab at the Overbrook Environmental Education Center<br>• Knowledge of air quality in environmental justice community in West Philadelphia<br>• Increased awareness of |

| | | | | | | |
|---|---|---|---|---|---|---|
| | session to identify air pollution sources and how to reduce air pollution in the neighborhoods.<br>• Develop pamphlets to identify best practice to 'Breathe Right' in the community<br>• Evaluate effectiveness of Health Neighborhoods Training & Campaign<br>• Conduct culminating event with community to review with community outcomes and finding to identify future Healthy Neighborhood behavior Targets<br>• Generate report and brochures on air quality.<br>• Develop graphics of environmental risks in community per EJ Screen and comparable data points | families will engage in Air Quality Monitoring<br>• 200 Children will receive coloring book on environmental Safety at home<br>• 300 families in zip codes 19151, 19131, 19139 and 19104 will receive Healthy home Pamphlets on practical practices for improving air quality, reducing exposures to lead.<br>• Community planning document to promote sustainable environmental health<br>• Develop on-line portal of data visualizations driven by | | Overbrook community involving heat and air quality.<br>• Installation of air quality monitors and completion of first set of monitoring for passive sampling and heavy metal monitoring | community (i.e., effect of climate change on heat, air quality, health, and its compounding effects on environmental justice issues.)<br>• Data on variability of air quality across neighborhoods in West Philadelphia<br>• Identification of factors influencing air quality in West Philadelphia<br>• Knowledge on if disparities exist in air pollution exposure in environmental justice community<br>• Communication of results to community members.<br>• Empowered community to advocate for improving air quality | air quality issues and greater participation from the community in environmental activities<br>• Continuation of PM2.5 and PM10 monitoring using purple air sensors |

| | | | | | | |
|---|---|---|---|---|---|---|
| | • Install air quality monitors (Purple air sensors, Ogawa passive samplers, and PQ100 PM2.5 Sampler)<br>• Calibrate purple air and passive samplers<br>• Download and analyze PM2.5 and PM10 data<br>• Laboratory analysis of passive samplers to measure NO2, NO2, O3, and SO2<br>• Analysis of heavy metals using inductively coupled plasma mass spectrometry (ICP-MS)<br>• Data visualization, data analysis, air quality mapping<br>• Reporting data on website<br>• Community meetings to share results and request input on next steps for action | community input<br>• PM2.5, PM10, NO2, NO, O3, and SO2 data from 15 outdoor and 5 indoor sites<br>• Pb and heavy metal concentrations from one site<br>• Air quality trends graphs and air quality maps<br>• Outreach materials for community meetings including data summaries<br>• Technical data summary reports<br>• Web pages with outreach materials on OEEC website<br>• List of action items developed by the community using results | | | | |